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Liquidity and Systemic Risk

Eric S. Rosengren

President & Chief Executive Officer

Federal Reserve Bank of Boston

2008 Credit Markets Symposium

"The Changing Business of Banking"

Federal Reserve Bank of Richmond

Charlotte, North Carolina

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It is a pleasure to be with you today. I want to thank the Richmond Federal Reserve Bank and President Lacker for inviting me to speak on an issue that central bankers have been spending significant time thinking about since last July – liquidity and systemic risk.[1]

President Lacker and I are seated next to each other at each meeting of the Federal Open Market Committee, and since the August FOMC meeting our introductory ritual has been to compare notes on the latest anomaly occurring in financial markets, and the newest acronym or product-name to come to the fore, as formerly niche areas of the

financial markets get their 15 minutes of either fame or infamy. From CDOs and SIVs to auction rate securities and conduits, they clearly have a big impact on the cost and availability of funds for consumers, businesses and governmental entities.

Today I am going to focus on the role of signaling – and specifically, reluctance to provide a signal that might indicate weakness – which seems to have played a significant role in the behavior of many financial market participants of late. I'll also say a bit about ways the Federal Reserve has tried to help address the problem, and share some of my own views on what the Fed's role can and should be in the future, informed by my background in both economic research and bank supervision.

If I were to select a light-hearted title for my remarks, it might be "Fear and Loathing on Wall Street." The basic premise is that as firms have become increasingly concerned about the valuation (pricing) of certain assets, their ability to accurately assess counterparty risk and the liquidity position of counterparties has become clouded. The lack of transparency in the prices of underlying assets, and the significant losses of some financial firms whose deteriorating situation had not been evident in earlier financial statements, have together made investors skittish. As a result, financial firms are increasingly willing to pass up the use of other attractive financing opportunities if they believe that action might lead to speculation about the liquidity or financial strength of their firm.

While such skittishness is not unusual during periods of illiquidity, it *is* unusual for a period of illiquidity to last this long.

I would like to provide a simple, non-financial example of the problems associated with signaling, and then proceed to describe some ways that these signaling

issues can complicate decisions related to short-run borrowing from the Federal Reserve, and affect credit markets more generally.

Let me say at the outset that concerns about signaling, stigma, and market information are one reason why the Federal Reserve can play, should play, and has played a significant role as a liquidity provider. Unlike private market participants, the Federal Reserve has no incentive to profit from knowledge of a counterparty's situation, making it a preferred counterparty during times of financial turmoil.

A Brief, Non-Financial Example

I am going to begin with a simple example of signaling that is personal, and unrelated to financial markets. I have always been an avid tennis player – although "avid," unfortunately, does not necessarily translate to "accomplished." I have had the good fortune to pass my enthusiasm for the game on to my son.

As he moved to adolescence it was clear that his game had surpassed mine in every dimension. Yet, his success was hampered by a simple signaling mechanism. When something in my play created a particular difficulty for him, he highlighted the difficulty by throwing his racquet. Fortunately, today's tennis racquets are made from alloys that help the Space Shuttle re-enter the atmosphere.

It does not take a very wily tennis competitor to realize that the optimal strategy is to repeat the same circumstances which frustrated or trumped the opponent – a tactic that resulted in an even more impressive trajectory for the racquet. Like my ability to surmise and exploit my son's primitive signaling mechanism, financial market participants are highly sensitive to signals offered by their competitors. And no financial institution

wants to do the equivalent of signaling a vulnerability by throwing their racquet – particularly with far more at stake than a family tennis match.

Discount Window Signaling

Similarly, firms' concerns about signaling have hampered the ability of the Federal Reserve to encourage borrowing from the Discount Window during times of stress. A particularly interesting example of this occurred last week with the latest auction conducted under the auspices of the Federal Reserve's new Term Auction Facility (TAF).

The results of the latest TAF auction are shown on Figure 1. Allow me to provide a bit of background.

The TAF is an alternative to a Discount Window loan. Both result in a loan from the Federal Reserve to a financial institution, collateralized by assets that the borrowing institution has pledged to the Federal Reserve. However, with the addition of the TAF, financial institutions have two ways to borrow from the Discount Window. They can borrow using a traditional Discount Window loan, which is a loan at the primary credit rate – traditionally overnight but now up to 90 days term.[2] Currently the primary credit rate is 25 basis points over the Federal Funds rate, or a rate of 2.5 percent. Alternatively, they can borrow for 28 days by participating in the Term Auction Facility, where the bidder is free to bid for funds at any rate above the minimum required for the auction (2.11 percent in the latest auction), and all those bids that are above the stop-out rate get the stop-out rate for the loan.

As can be seen in the graph, last week the stop-out rate was 2.82 percent, significantly higher than the primary credit rate of 2.5 percent. Such a bid could be explained if market participants believed it was likely that market rates would rise over the 28 day term, but evidence from trading in Federal Funds futures and in overnight index swaps indicate the opposite – that market participants believe it is far more likely that the Federal Funds rate will fall from its current target. Similarly, the TAF stop-out rate exceeds the one-month London Interbank Offered Rate (Libor), the rate at which banks can borrow one month unsecured money in London.

So how can this seeming anomaly be explained?

First, the Federal Reserve does not trade for profits in the markets, so the firms can bid in the auctions without fearing that their bids imply any immediate signaling of potential balance-sheet constraints or liquidity problems to the counterparty, the Federal Reserve. As a result, firms may be willing to pay a premium for transacting with the Federal Reserve in order to avoid any immediate public signaling, and to avoid taking actions that could potentially be construed as signaling the existence of problems.

Second, firms may want to be sure that they have some term funding, and by placing bids well above the primary credit rate they are in effect offering the equivalent of a non-competitive bid in a Treasury auction. They are willing to purchase the use of the term funds at whatever the current market clearing price is in the auction, even if there are less-costly options at the Discount Window or with private parties.

Third, the winners of TAF auctions are not disclosed by the Federal Reserve. Of course, neither are institutions that take out Discount Window loans disclosed by name. However, market participants may believe that the auction process, where a variety of

banks are jointly acquiring funds, may be interpreted differently than an individual institution borrowing from the Discount Window.[3]

Signaling and Short-Term Debt

The fact that banks are still choosing more costly financing options to avoid any potential signal of liquidity or balance-sheet constraints is very noteworthy – in that the financial turmoil that began in July of 2007 continues, even nine months after the onset of problems.

Figure 2 shows short-term interest-rate spreads. As you can see, Libor had tracked closely with the Federal Funds rate target in the first half of 2007, but has been elevated since the onset of financial problems in late July 2007. This has occurred despite an overnight index swap rate that has been below the Federal Funds target since July, indicating a market perception that rates were likely to fall below the Federal Funds target. Since firms in such an environment should be able to borrow Federal Funds at the low rate, and lend funds at the elevated Libor rate, the puzzle is why these rates have become, you might say, "unhinged."

The volume of term lending transactions has declined significantly, with few buyers or sellers of term funds. I can suggest several reasons.

First, many potential suppliers of funds have become increasingly concerned about their capital position, causing them to look for opportunities to shrink (or slow the growth of) assets on their balance sheets, in order to maintain a desirable capital-to-assets ratio. Since unsecured inter-bank lending provides relatively low returns and has little

benefit in terms of relationships, banks may prefer to use their balance sheet to fund higher-returning assets that advance long-term customer relationships.

Second, as the uncertainty over asset valuations has increased, banks have become reluctant to take on significant counterparty risk to financial institutions – particularly with those that have significant exposure to complex financial instruments.

Third, many potential borrowers are reluctant to buy term funds at much higher rates than can be obtained overnight, for fear that they may signal to competitors that they have liquidity concerns. However, when the counterparty is a central bank, financial institutions have been quite willing to buy term funding, sometimes at rates higher than they would expect if they were to borrow funds overnight.

The various liquidity facilities being made available by central banks have helped improve liquidity, and borrowers are more willing to purchase term lending. However, the gyrations in the spread between Libor and the overnight index swap rate shown in Figure 3 demonstrate that we continue to have episodes where the spreads become large by historical standards. In addition, at times market participants have complained that few if any transactions occur at term Libor rates when uncertainty in the market increases.[4]

While actions taken by central banks are improving the supply of term financing, eventually the confidence in private counterparties to comfortably buy or sell term funds needs to be restored. A key ingredient in this outcome is that counterparties are truly well capitalized and have a financing structure that does not make them susceptible to counterparty runs. Increased capital not only reduces solvency risk, but also reduces the need for liabilities that might flee during periods of financial difficulty.[5]

Unlike the credit crunch in the early 1990s in the United States, many financial firms have raised significant capital. Unfortunately, while in many cases these equity issues have offset recent losses, they may leave little additional buffer should further credit losses occur. A number of large financial institutions have reduced their dividends, and given the potential for additional capital shortages it goes without saying that financial institutions should continue to assess whether further reductions or cessation of dividends would be advisable.

Increases in capital not only reduce solvency risk but also have salutary macroeconomic implications. Financial institutions that choose not to raise capital through new equity issues or reductions in dividends are likely to react to capital losses by shrinking their balance sheets. Where and how they choose to reduce credit can have macroeconomic implications, as the availability of credit can become a factor for some subsets of borrowers.

While the most obvious loss of credit availability has been the unwillingness of many lenders to continue to lend for subprime mortgages[6], other areas of the economy may also be impacted as lenders seek to shrink their balance sheets and lower their exposure to areas that may be adversely impacted by the current financial turmoil and a slowing economy.

So far the main effect of the financial turmoil has been concentrated in large financial institutions that may be able to attract additional investors (see Figure 4). These types of institutions tended to hold the complicated financial instruments that have been most affected by the financial turmoil. They have also seen their assets grow as they have needed to move some off-balance-sheet assets onto their balance sheet, had lines of

credit and liquidity options drawn down, and have been unable to distribute loans that they had originated and expected to resell.

Smaller banks have generally not held these complicated financial instruments, so they have been more insulated from the financial turmoil.[7] They also have not been liquidity providers for securities, so they have experienced less unexpected growth in their assets. As a result, there have been far fewer complaints from small and medium sized businesses – generally the clients of smaller banks – about credit availability.

However, it is important to note that the continued health of small and medium sized banks will be impacted should residential and commercial real estate prices decline in a severe manner. While that is not my forecast, it is only fair to note that for the liquidity problems to be confined it is important for collateral values to stabilize. Significant price declines will likely lead to more residential and perhaps commercial mortgage defaults not necessarily limited to the subprime market, and thus more likely linked to mortgages held in portfolio by smaller banks.[8]

Conclusion

The extended period of illiquidity – in markets that, a year ago, would have been described by most as highly liquid and relatively low risk – highlights the importance of understanding liquidity risk, and understanding which asset-pricing and accounting assumptions rely on liquid markets. The ability to value complex financial instruments and the use of market-value accounting for financial statements are integrally tied to assumptions of liquid markets. In markets where few if any transactions occur, valuation

difficulties can severely hamper the ability of key market participants to evaluate their counterparty risk and hence the functioning of markets.

I believe this period of illiquid markets should also cause central banks to re-evaluate their roles. For a central bank to play an effective role during financial turmoil, it needs to understand the sources of liquidity problems, the interrelationships between market participants, likely losses, and market participants' potential reactions to these losses[9].

In my view, this can only be done if the central bank has some form of hands-on supervisory experience with institutions – particularly the "systemically important" institutions – regardless of who is the primary regulator. The Federal Reserve has been far more effective during this crisis because it has hands-on experience with bank holding companies that are among the most significant players in many financial markets.

In short, there are significant synergies between bank supervision and monetary policy during periods of financial turmoil – synergies that can be used to achieve better outcomes for the public as policy makers try to determine the impact of liquidity problems and how changes in credit will impact the broader economy[10].

Having some form of similarly hands-on supervisory experience with any systemically important financial institution that may need to access the Discount Window is, in the long term, critically important. We need to understand the solvency and liquidity positions of firms that may access the Discount Window – with access, at the very least, to the information any counterparty would require in a lending relationship. For those financial institutions that do have access to the Discount Window, there is indeed a need for the Fed to have broader access to information than marketplace

counterparty creditors, if we are to effectively manage our responsibilities as lender of last resort and custodian of financial stability. So, regardless of who is the primary regulator, it is important for the Fed to understand the consolidated capital and liquidity positions of such firms.

In sum, I believe that as we consider these and other lessons learned from the current turmoil, we can take appropriate actions to reduce the likelihood that extended periods of illiquidity will occur in the future.

Notes:

[1] Of course, the views I express today are my own, not necessarily those of my colleagues on the Board of Governors or the Federal Open Market Committee (the FOMC).

[2] Discount Window loans are generally described as overnight loans, and had traditionally been. Due to actions taken by the Federal Reserve in response to market events, however, depository institutions can take Discount Window loans out for any term between overnight and up to 90 days. In August 2007 the Federal Reserve Board announced a change to allow the provision of term financing for as long as 30 days, renewable by the borrower. Then in March 2008 the Board approved an increase in the maximum maturity of primary credit loans to 90 days.

So, in essence a 28-day term Discount Window loan could be secured by a depository institution – a loan that would be similar to using the TAF's structure, but at lower rate.

Also, it is worth highlighting that another structural difference between the TAF and the Discount Window is that a Discount Window loan can be prepaid at the option of the depository institution while the TAF cannot. This suggests that an institution with all other factors being equal, and absent consideration of any "stigma" or signaling issues, might use the Discount Window over the TAF.

[3] By some accounts the reporting of Discount Window borrowing by Federal Reserve District is particularly concerning to a firm in a District which has few large participants – because any large borrowings from within such a District are likely to be done by only a limited pool of institutions, making market speculation more finely focused.

[4] Recently, the financial press has reported on market speculation that Libor fixings are being under-reported. For example, the *Wall Street Journal* on April 17 noted that "Bankers and traders have expressed concerns that some banks don't want to report the high rates they are

paying for fear of creating the impression they are desperate for cash." ["British Bankers Group Steps Up Review of Widely Used Libor" by Carrick Mollenkamp and Laurence Norman].

[5] Raising and retaining capital is one way to reduce this risk. Other steps could include improving transparency and disclosure practices – particularly around underlying assets, off-balance-sheet risks, and valuation techniques.

[6] In essence subprime loans refer to mortgage loans that have a higher risk of default than prime loans, often because of the borrowers' credit history. The loans carry higher interest rates reflecting the higher risk. Certain lenders, typically mortgage banks, may specialize in subprime loans. Banks, especially smaller community banks, generally do not make subprime loans, although a few large banking organizations are active through mortgage banking subsidiaries.

[7] Parenthetically, the TAF's minimum bid size was reduced to $5 million in February to facilitate the participation of smaller institutions. See the Federal Reserve press release dated Feb. 1, 2008.

[8] See "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures," Working Paper No. W07-15 by Kristopher Gerardi, Adam Hale Shapiro, and Paul Willen, available on the Federal Reserve Bank of Boston's website, www.bos.frb.org.

[9] This theme is more developed in a speech given in March at a conference hosted by the Bank for International Settlements and the Bank of Korea, entitled "Bank Supervision and Central Banking: Understanding Credit During a Time of Financial Turmoil". For a copy of the speech please refer to http://www.bos.frb.org/news/speeches/rosengren/2008/032708.htm

[10] Several academic papers have found that supervisory information could be useful in forecasting inflation, unemployment, and bank dependent components of GDP. Please refer to the following papers for more details:

See "Is Bank Supervision Central to Central Banking?" by Joe Peek, Eric Rosengren, and Geoffrey M. B. Tootell in *The Quarterly Journal of Economics*. vol. 114 (May 1999): pages 629-653. The paper finds that confidential bank supervisory information could help more accurately forecast important macroeconomic variables and is useful to monetary policymaking. The findings suggest that the complementarity between supervisory responsibilities and monetary policy should he an important consideration when evaluating the structure of a central bank.

Also see "Does the Federal Reserve Possess An Exploitable Informational Advantage?" by Joe Peek, Eric Rosengren, and Geoffrey M.B. Tootell in the *Journal of Monetary Economics*, vol. 50, no. 4 (May 2003), pages 817-839, which found evidence that the Federal Reserve has an informational advantage that can be used to improve monetary policy.

Also, in "Identifying the Macroeconomic Effect of Loan Supply Shocks," by Joe Peek, Eric Rosengren and Geoffrey M.B. Tootell in the *Journal of Money Credit and Banking*. vol. 35, no. l 6 part 1 (December 2003), pages 931-946, the authors found that confidential supervisory information was useful in predicting components of GDP that would likely be dependent on bank financing.