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Money Markets and Financial Stability

Remarks by

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at the

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Market participants, scholars, and central bankers and other policymakers have long recognized that liquid money markets are critical to financial stability. Many banks and other financial market participants obtain a significant portion of their funding in the money markets and rely on rolling over such short-term debt. Developments in global financial markets since last summer have underscored that if market participants become concerned about their access to money market funding, they can pull back from providing credit to other financial market participants and to businesses and households. Furthermore, certain liquidity tools traditionally used by central banks may not be fully effective in restoring liquidity to the money markets and containing the threats such money market disturbances pose to financial stability. We all need to reflect carefully on these developments and draw appropriate lessons regarding the management of liquidity risk and the design of central bank liquidity facilities.<sup>1</sup>

### **The Role of Money Markets in the Recent and Ongoing Financial Market Turmoil**

The financial turmoil that we have been experiencing since last summer clearly did not originate in the money markets. As everyone knows, the trigger was losses associated with soaring delinquencies on U.S. subprime mortgages that were originated from 2005 through early 2007, a period during which underwriting standards for such mortgages weakened dramatically. But the loosening of standards and terms on subprime mortgages was also symptomatic of a broader erosion of the underwriting of loans to households and businesses. Many of those loans had been packaged as asset-backed securities and sold to investors who relied on the credit ratings of the securities rather than thoroughly conducting their own due diligence on the securities' risk characteristics. When those investors experienced significant losses on even the most highly rated securities backed by subprime collateral, they lost confidence in the ratings

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<sup>1</sup> Patrick Parkinson, of the Board's staff, contributed to the preparation of these remarks. The views expressed are my own and do not necessarily represent the views of other members of the Board or the Federal Open Market Committee.

and pulled back from markets for a range of asset-backed securities, especially those with more complex structures. During the spring and early summer of 2007, the pullback by investors began to put pressure on the liquidity of banks and other financial institutions that had originated large volumes of loans with the expectation of distributing them.

That pressure became severe and widespread when the liquidity of the asset-backed commercial paper (ABCP) markets became impaired in early August 2007. Money markets, like that for ABCP, are especially vulnerable to a decline in confidence because so many investors in that sector, such as money market funds, are seeking assured safety and liquidity. And well-functioning money markets are critical to the originate-to-distribute model of financial intermediation that has become an increasingly important means of funneling savings into investment. Originators and packagers need the money markets to fund loans accumulated for later resale; and liquidity in securitization markets depends on dealers being able to borrow in money markets to hold inventories acquired in the process of making markets. An illustration of such dependency is that problems in money markets fed back on mortgage markets last year because many securitized loans were being financed on a more permanent basis with short-term money market paper, such as ABCP.

I believe that the depth, scope, and persistence of the financial turmoil we have been experiencing is in significant part attributable to broader concerns about the liquidity of money markets. A loss of liquidity in a money market generally has more serious effects than a loss of liquidity in markets for longer-term instruments because such large amounts of money market instruments become due each day. If investors pull back from a money market, the issuers come under substantial liquidity pressures very suddenly. In the case of ABCP, with the exception of paper issued by structured investment vehicles (SIVs) and so-called extendible paper, issuers

were able to meet those liquidity demands by drawing on committed lines of credit from banks. But that simply transferred the liquidity pressure to the banking system. Banks generally were able to cope with that pressure, but the need to fund the draws on their backup lines ate substantially into their liquidity and capital buffers. Thus, credit problems in mortgage markets helped reduce the availability of credit across a wide variety of instruments and borrowers.

The pressure on their liquidity and on their balance sheets, combined with heightened credit concerns, made banks reluctant to provide others with term funding--that is, money market loans with terms longer than overnight. Term premiums embodied in interbank money markets increased markedly; at times the spreads between term dollar Libor and comparable-maturity overnight index swap rates exceeded 100 basis points, and term premiums of comparable magnitude also emerged in interbank markets for sterling and euros. Securities firms and hedge funds also found term funding considerably more costly and difficult to obtain after the strains emerged in the ABCP markets. Convinced that the illiquidity of money markets and persistently enlarged term premiums were a significant impediment to restoring the effectiveness of financial market functioning, the Federal Reserve in late 2007 and early 2008 took steps to make borrowing at the discount window more attractive to banks and provided greater liquidity to primary dealers in U.S. government securities by extending the maturity of its open market operations.

For a time those actions seemed to be reducing the pressures in term funding markets. However, in mid-March events once again demonstrated how disruptions to money markets can threaten financial stability. Growing concerns about the financial condition of Bear Stearns undermined the confidence of its creditors and counterparties and in a few days eroded what it and its regulator had judged to be an ample liquidity cushion. Although the demands on its

liquidity took many forms, the principal drain resulted from the reluctance of creditors and counterparties to roll over the overnight secured transactions that Bear Stearns used to finance a substantial portion of its balance sheet. Unable to roll over those transactions, Bear Stearns would have been forced to file for bankruptcy unless other sources of financing became available. A bankruptcy filing would have forced its secured creditors to liquidate the underlying collateral, which would have added to already severe downward pressures on prices given the illiquidity of the markets for some of this collateral. Those creditors and counterparties, which included money market funds and other highly risk-averse investors, might well have responded to the sharp and unexpected reduction in the liquidity of their portfolios, as well as to possible losses and a heightened risk of future losses, by pulling back from providing secured financing to other primary dealers.

In those circumstances, in which a much broader and less containable liquidity crisis threatened to emerge, the Federal Reserve Board judged that it needed to use its emergency liquidity powers to avoid a bankruptcy filing by Bear Stearns. Furthermore, to reduce the potential for counterparties and creditors to make a run on other primary dealers, the Federal Reserve used its emergency lending authority to create a new facility that provided the primary dealers with a liquidity backstop similar to the discount window available to banks in generally sound financial condition. These actions by the Federal Reserve and other central banks have contributed to some improvements in the liquidity of term money markets. But market functioning remains far from normal. In particular, although spreads between Libor and comparable swap rates have receded from their recent peaks, they remain abnormally high.

Until the market turmoil fully abates, we run some risk in trying to draw lessons from recent experience. Nonetheless, I believe experience to date has taught some lessons regarding

the management of liquidity risk by market participants and the design of central bank liquidity facilities that will prove durable.

### **Liquidity Risk Management**

Recent developments suggest that market participants must thoroughly reassess the market-liquidity assumptions that underlie their existing risk-management practices. The scope and duration of disruptions to market liquidity that we have experienced since last summer have greatly exceeded what market participants, prudential supervisors, and central banks thought likely or even possible. The implications are quite broad and significant. In general, in determining the appropriate size of their liquidity buffers (their holdings of unencumbered liquid assets or their access to very stable sources of funding), market participants must plan for the possibility of more-severe liquidity shocks. For example, originators and distributors of securitized assets need to be prepared for the possibility that the securitization markets seize up and force them to fund loans in the securitization pipeline. Banks that provide liquidity backstops to the ABCP markets or to other issuers of short-term liabilities need to prepare for the possibility that broad disturbances to money market liquidity force many issuers to draw upon the backstop facilities at the same time. And sponsors of ABCP programs and other facilities in which short-term liabilities fund longer-term assets need to recognize that reputational concerns may induce them to purchase paper that cannot otherwise be sold or to purchase the collateral that cannot be financed.

Perhaps most important, market participants must reassess their assumptions about the stability of secured funding in circumstances in which the liquidity of the markets for the underlying collateral becomes impaired. That reassessment is especially important because in recent years market participants have been funding growing volumes of relatively less liquid

assets though secured financings in the money markets. In the ABCP markets, collateral expanded beyond short-term corporate and consumer receivables to include large amounts of paper that SIVs and other “securities arbitrage” programs used to finance mortgage-backed securities, other asset-backed securities, and long-term debt issued by financial institutions. In the even larger tri-party repo markets, broker-dealers finance not only Treasury securities but also very substantial amounts of agency debt, agency mortgage-backed securities, and various other types of privately-issued debt instruments. So long as the markets for the collateral remain liquid, lenders are likely to remain confident that the margin requirements applied to the collateral provide adequate protection against loss. But if liquidity evaporates, borrowers whose creditworthiness is questioned can suddenly encounter difficulties financing now-illiquid collateral.

The primary responsibility for reassessing and strengthening the management of liquidity risk appropriately rests with market participants themselves, but prudential supervisors, working with central banks, should carefully review the practices of regulated entities. In particular, the public authorities must address a difficult yet very important question: To what degree should entities with access to central bank credit be permitted to rely on that access to meet potential liquidity demands? Central bank liquidity facilities are intended to permit those with access to hold smaller liquidity buffers, which allows them to fund more longer-term assets and thereby promotes capital formation and economic growth. At the same time, however, the existence of central bank credit facilities can so undermine incentives for maintaining liquidity buffers that institutions hold more longer-term assets than is socially desirable and thereby pose excessive risk to themselves and the financial system.

In principle, prudential regulation of institutions with access to central bank credit can limit moral hazard and induce institutions to hold amounts of longer-term assets and liquid assets that are socially desirable. In practice, however, this requires difficult and necessarily somewhat arbitrary judgments about the types of liquidity stress scenarios that institutions should plan to confront without access to central bank credit and, correspondingly, those scenarios in which institutions in sound financial condition can appropriately rely on central bank credit. For example, for what types of collateral can institutions appropriately assume that secured financing will always be available, because markets for that collateral ordinarily are highly liquid and because if they are not central banks can be expected to take actions to address the situation. Conversely, for what types of collateral should institutions prepare for a loss of secured funding and for how long a period? Although recent experience suggests that these are very important questions, it provides only limited insights regarding the answers.

### **Central Bank Liquidity Facilities**

I have already mentioned a number of steps the Federal Reserve has taken to address liquidity problems in money markets, including the creation of new or expanded auction facilities for discount window and securities lending and the opening of our lending facilities to more counterparties. Many other central banks also found that they needed to adapt their methods of providing liquidity to the unusual pressures associated with the market turmoil since last summer. Although specific actions varied according to the severity of the pressure and the characteristics of the preexisting operational framework, many central banks concentrated operations more in longer maturities, broadened the range of collateral accepted in various types of operations, and increased the utility of standing loan facilities; some made loans in other currencies by use of swaps with the Federal Reserve, enhanced securities lending operations, and



engaged in auctions or other new methods to distribute some kinds of liquidity. In many cases, these innovations involved a degree of cooperation in timing or action across central banks.

Normally, most central banks supply and absorb reserves primarily in the safest and most liquid parts of the money markets.<sup>2</sup> In these segments of the markets they can operate in size without distorting prices, and without preferential treatment for certain private borrowers or forms of collateral. The private sector then distributes the reserves around the markets--across counterparties, maturities, and degrees of creditworthiness. The resulting transactions enhance market liquidity and allow private market participants to allocate credit and determine the appropriate compensation for taking risk.

However, this private-sector intermediation process in money markets became severely impaired in the recent turmoil. As I already mentioned, uncertainty about the value of assets, about the creditworthiness of counterparties, and about future calls on the liquidity and capital of important market participants caused liquidity to dry up in many segments of the money markets. A flight to liquidity and safety is not unusual when uncertainty rises and markets are disturbed, but the breadth and persistence of this turmoil and its spread into money markets made it a substantial threat to financial and economic stability.

To ameliorate the threat to financial and economic stability, the Federal Reserve and a number of other central banks in effect found they needed to provide a substitute for the arbitrage and trading no longer being undertaken in sufficient size by the private sector. These central banks changed the composition of their balance sheets, selling or lending the assets that were in especially strong demand and lending against the illiquid assets the private sector was having difficulty financing. The purpose of those moves has been to forestall fire sales of assets that

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<sup>2</sup> The Federal Reserve makes loans at the discount window against a wide range of collateral, but under most circumstances this facility is lightly used.

could no longer be financed, to facilitate orderly deleveraging and reintermediation in the financial sector, and to encourage the reopening of private markets for securitization products so that price discovery could proceed and credit flows resume.

Those actions raise a number of difficult public policy questions for central banks and other public authorities. An important issue is how durable the changes should be; to what extent are they a desirable adaptation of central bank tools to the current structure of markets, and to what extent should the changes be phased out as market functions are restored?

I start from the premise that central banks should not allocate credit or be market makers on a permanent basis. That should be left to the market--or if externalities or other market failures are important, to other governmental programs. The Federal Reserve should return to adjusting reserves mainly through purchases and sales of the safest and most liquid assets as soon as that would be consistent with stable, well-functioning markets. In fact, several of the Federal Reserve's new programs are designed to be self-liquidating as markets improve. Minimum bid rates and collateral requirements have been set to be effective when markets are disrupted but to make participation uneconomic when markets are functioning well. Under current law, our facilities for investment banks that don't involve securities eligible for open market operations (OMO-eligible paper) will necessarily be wound down when circumstances are no longer "unusual and exigent"; I'll come back to questions about these facilities in a minute.

However, the Federal Reserve's auction facilities have been an important innovation that we should not lose. They have been successful at reducing the stigma that can impede borrowing at the discount window in a crisis environment and might be very useful in dealing with future episodes of illiquidity in money markets. The new auction facilities required

planning and changes in existing systems, and we should consider retaining the new facilities for the purposes of bank discount window borrowing and securities lending against OMO-eligible paper, either on a standby basis or operating at a very low level when markets are functioning well in order to keep the new facilities in good working order. The latter might require that we allow the auction to set the price without a constraining minimum, but a small auction should not distort the allocation decisions of private participants.

Our experience in recent months has underlined the global interdependencies of financial markets. Globally active banks manage their positions on an integrated basis around the world, and pressures originating in one market are quickly transmitted elsewhere. Central banks should consider how to adapt their facilities to help these institutions mobilize their global liquidity in stressed market conditions and apply it to where it is most needed. That approach will require the consideration of arrangements with sound institutions in which central banks would accept foreign collateral denominated in foreign currencies. Those arrangements are under active study and a number of issues need to be resolved. It is possible that over time, major central banks could perhaps agree to accept a common pool of very safe collateral, facilitating the liquidity management of global banks. The stipulation that the institutions be sound is important: Decisions about lending to troubled banks should be made by home country authorities with knowledge and responsibility.

Another instrument of liquidity provision that central banks are examining is currency swaps to facilitate granting liquidity in other currencies. The central banks found currency swaps useful because the impediments to intermediation in money markets naturally extended to transactions across currencies as well as across maturities and counterparties. Supplying credit in dollars to banks in the euro area and Switzerland helped relieve pressure on those banks and in

our markets. In recent months, the Fed was able to make currency swap arrangements on short notice but our reaction time could be even shorter if we keep such arrangements in place or on standby. Thinking carefully about which circumstances in the future would warrant the activation of such arrangements will be a useful form of contingency planning.

For the United States, of course, perhaps the most difficult and important question involves access to central bank credit facilities by U.S. broker-dealers, including the primary dealers. Over the past several decades, the growing importance of broker-dealers and the increasing interconnections of these institutions with other parts of the financial marketplace have accompanied the shift to intermediation through securities markets rather than through commercial banks. Financial markets in most other countries are dominated by universal banks; in those circumstances, securities activities are carried out in organizations that have access to the discount window and other aspects of the safety net we associate with commercial banks. As I have emphasized this evening, one of the things we learned over recent months is that broker-dealers, like banks, are subject to destructive runs when markets aren't functioning well, despite the fact that their borrowing in money markets is mostly secured and their assets mostly marketable. And, in the case of Bear Stearns, we saw that a run on a major broker-dealer when markets were already disrupted by a flight to safety and liquidity could, through a chain of actions and reactions, threaten financial stability.

We gave the primary dealers access to central bank credit under the unusual and exigent circumstances prevailing in mid-March. Their counterparties and creditors will presume that such access would again be granted if the health of the financial system is again threatened by loss of liquidity at the primary dealers. The public authorities need to consider several difficult issues with respect to access to the discount window. One is the circumstances under which

broker-dealers should be permitted to borrow in the future. One possibility would be to confine such borrowing to circumstances in which the Federal Reserve judges that the stability of the financial system is at risk--as we did in March. Another would be to grant broker-dealers the same sort of regular access enjoyed by commercial banks

The question has implications for the appropriate regulatory regime for broker-dealers and their parent companies. As I've already noted, the existence of liquidity facilities at the central bank can undermine normal incentives for maintaining liquidity buffers, and the more extensive the access, the greater the degree to which market discipline will be loosened and prudential regulation will need to be tightened. Unquestionably, regulation needs to respond to what we have learned about the importance of primary dealers and their vulnerabilities to liquidity pressures. We need to confront the difficult questions I raised earlier about the scenarios in which it is appropriate to rely on central bank liquidity and the scenarios in which such reliance is inappropriate. And we need to ensure that supervisory guidance regarding liquidity risk management is consistent with the way we answer those questions. Whether broader regulatory changes for broker-dealers are necessary is a difficult question that deserves further study.

In the interim we are working closely with the Securities and Exchange Commission to provide appropriate prudential oversight of primary dealers and their affiliates. We are also looking at ways to strengthen the infrastructure of financial markets, including markets for secured financing and over-the-counter derivatives markets. In terms of reducing the risk of money market disruptions, steps to strengthen market infrastructure complement supervisory efforts to strengthen the management of liquidity risk at individual firms.

## **Conclusion**

As I noted at the outset, one important lesson from recent developments is that we need to devote greater attention to money markets. Disruptions to those critical markets have the potential to significantly harm the financial system and the real economy. Thus, this conference, which brings together market participants, scholars, and policymakers, is quite timely. I have no doubt that it will yield important insights into the issues I have been discussing.