



***“The Impact of Financial Institutions and Financial  
Markets on the Real Economy: Implications of a  
‘Liquidity Lock’ ”***

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It is great to be back at the University of Wisconsin – Madison, where I earned my Ph.D. in 1986.

The economics department at the University of Wisconsin is known for producing empirically focused, pragmatic economists with a strong interest in public policy. Certainly it is a good time to have this as your training. Among the few beneficiaries of the current financial turmoil will be economics graduate students, who should not have any trouble finding dissertation topics to study in the coming years. More broadly, I hope that the Wisconsin economics department continues to provide the economics graduates needed to address the problems of an increasingly complex world.

Recent events in financial markets, and weak incoming data, suggest that the economy is likely to grow well below its potential for the rest of this year.<sup>1</sup> While the second quarter benefited from the Federal tax rebates of the “stimulus plan,” and strong exports, these sources of growth do not appear to be carrying into the second half.

Consumers faced with falling housing prices, falling stock prices, and a weakening labor market are unlikely to continue to spend at the same rate that they did in the second quarter; and recent data seem, unfortunately, to confirm this expectation. Exports are likely to weaken as many of our trading partners are facing significantly slower growth prospects in their own economies. Recent data also show little evidence that the housing market has “touched bottom.” And firms appear to be holding back on investments until the economic outlook becomes clearer.

The weakening in the real economy is being compounded as so-called “financial headwinds” become more severe. The losses of capital and de-leveraging of balance sheets that have been underway at many financial institutions are continuing to serve as a drag on the economy, as financial institutions focus on restructuring their balance sheets with the consequent tightening of lending standards.

Recall that a loan is counted as an asset on a bank’s balance sheet. Banks hold capital in part to reserve against the possibility that a loan defaults, and must maintain a reasonable ratio of capital to assets. If a bank experiences a reduction in the value of its capital, it must take steps to shrink the asset side of its balance sheet in order to restore its desired capital-to-assets ratio. In other words, the bank becomes more restrictive in its lending.<sup>2</sup> This is no small matter for the broader economy when you consider that, thanks to leverage, when a

bank's capital declines, the bank must reduce its loans *by much more* to maintain its capital-to-assets ratio.

In addition to this state of affairs, often referred to as a "credit crunch," a new and unwelcome wrinkle to the financial turmoil is occurring in many short-term credit markets – something you might call a "liquidity lock." By liquidity lock, I am referring to extreme risk aversion by many investors and institutions, which makes short-term financing difficult to come by for even the most creditworthy firms – including financing for very short maturities, measured in days.

Today I am going to focus on this aspect of the current financial turmoil – the enhanced role of liquidity-risk concerns. Liquidity risk occurs when sellers cannot be sure that they can sell assets in a timely fashion without offering a very steep discount.

Allow me to make an important point at the outset. My goal is not to be alarmist or even pessimistic, but rather to provide what I hope is a helpful and illuminating view of recent developments. Because only in understanding the situation and its severity can all of us, and especially policymakers, develop effective responses in the near term and long term.

Particularly striking have been the stories a number of market participants have told me about how, at times during this financial turmoil, there have been few, if any, bids for even high-grade financial paper that has a maturity greater than one day. An example of this has been the unwillingness of many of the largest financial institutions to lend to each other – as represented by the very large spread between the London Interbank Offered Rate (Libor) and the overnight index swap rate (Figure 1).

If it were to persist, this unwillingness to take credit risk, or to lend money other than overnight, could constrain creditworthy borrowers from undertaking worthwhile projects – and thus have implications for economic growth.

Note that this liquidity lock, where transactions are impeded by severe risk aversion by potential investors, *compounds* problems created by a traditional credit crunch – a situation in which institutions seek to shrink assets (like loans) in order to meet regulatory or market-imposed capital-to-assets ratios. In the current crisis, not only are financial firms faced with a need to de-lever (thus, a credit crunch), but they are also finding it increasingly difficult to borrow other than overnight – even if they are an organization that is highly rated (thus, a liquidity lock).

To explore this situation with you today, and to discuss some policy initiatives, I would like to cover three topics: first, the critical role of financial intermediation in the economy; second, what is actually happening with financial turmoil and liquidity; and third, new credit and liquidity facilities at the Federal Reserve that represent important policy responses to the crisis.

## **I. The Critical Role of Financial Intermediation**

Financial intermediaries like banks provide a critical function in the economy. They essentially match borrowers and lenders – taking funds provided by depositors or investors and distributing those funds to individuals and firms that have opportunities for higher potential returns. The individuals and firms often seek to use the funds for significant periods of time, and there is some degree of credit risk. This transformation of assets – where firms

with opportunities for higher potential returns obtain funds from investors and depositors looking for shorter-term safer investments – is facilitated by the financial intermediary.

The financial intermediary needs to have expertise in identifying creditworthy investment opportunities, monitoring the investments, and obtaining enough unrelated investments to provide the benefits of diversification. In normal times or circumstances, the financial intermediary can allow depositors or investors access to their funds with little or no notice, because the financial intermediary draws its funds from a diversified set of depositors (with diverse financial needs), and thus they are unlikely – again, in normal economic times – to demand their funds simultaneously.

But if depositors and investors do all seek their funds simultaneously, as in times of heightened uncertainty about the soundness of intermediaries, the financial intermediary may experience a significant liquidity problem. To sell a large volume of assets in a very compressed time may be difficult, and probably would require selling at a price that is quite low compared with the price that might be obtained in selling the assets gradually over a longer period of time. Liquidity problems can become even more acute if the reason for the early redemption is a widespread move by investors to reduce risk, or if the reason is less confidence in financial intermediaries *generally*.

During the recent financial turmoil, some fundamental assumptions about the financial system have proven to be seriously flawed. Specifically, assumptions concerning the ability of some financial intermediaries to generate sufficient liquidity to meet potential redemptions of investors have proven to be excessively optimistic.

A leading example has been the assumption that investment banks are insulated from liquidity concerns because, although they are quite dependent on short-term financing, they

can borrow using their assets as collateral. Investment banks typically raise funds via repurchase agreements (“repos”), which are agreements that are essentially short-term (often overnight) collateralized loans.<sup>3</sup> The collateral for repurchase agreements has traditionally been government and agency securities (Fannie Mae, Freddie Mac, and other government-sponsored enterprises or GSEs), but over the years there has been an expansion to riskier assets.

Because the lender could sell the collateral assets if the investment bank defaulted, financing with repurchase agreements that provided collateral in excess of the loan amount was viewed as significantly reducing any potential liquidity problems. However, in recent years investment banks have increasingly collateralized their repurchase agreements with mortgage-backed securities and other securities that, in the current crisis, have become difficult to value and thus to sell on short notice. As a result, investors have become less willing to lend to troubled firms even on a collateralized basis; they take little comfort that their recourse is to sell collateral, since they might have to sell it at a significant loss.

Investment banks have found that having ample assets to use as collateral did *not* insulate them from liquidity problems. And because they were highly leveraged, they were susceptible to a “run” by their investors and counterparties. Their sources of the short-term funding on which they relied to stay in business refused to lend to them.

In part to reduce this liquidity problem, the Federal Reserve provided a liquidity backstop to investment banks through the creation of a primary dealer credit facility. It should be noted that the Federal Reserve imposes a substantial “haircut” (write-down) on the value of the collateral it accepts at such facilities.

In addition to turning to our primary dealer credit facility, investment banks have also moved recently to obtain the more stable funding source available to commercial banks – federally insured deposits. They have either been acquired by commercial banks or acquired bank holding company charters. Commercial banks are less vulnerable to runs, while also offering less leverage since they are required to maintain a higher capital-to-assets ratio than are investment banks.

## **II. Financial Turmoil and Liquidity**

More recently, liquidity concerns have spread to other financial intermediaries, including taxable money market mutual funds, which hold approximately \$2.9 trillion in assets.<sup>4</sup>

Money market mutual funds (MMMFs) are regulated by the SEC<sup>5</sup> and are required to hold assets that during normal periods are viewed as safe and highly liquid. These restrictions<sup>6</sup> are intended to insure that there is little risk to principal.

In addition to holding government and agency securities, MMMFs tend to hold highly rated unsecured commercial paper, asset-backed commercial paper, and large certificates of deposit. The unsecured commercial paper represents short-term debt issued by some of the largest and most creditworthy non-financial and financial firms in the United States. The asset-backed commercial paper represents debt instruments used to finance short-term receivables, which can include home-equity loans, student loans, and credit-card loans. Certificates of deposit are debt issued by large domestic and foreign commercial banks.

Institutional money market funds all hold short-term, high-grade securities.

However, some hold only Treasury securities; some hold a mix of Treasury and agency securities; and some – sometimes called “prime” funds – hold a mix of Treasury issues, agency securities, and short-term debt instruments. While a MMMF that holds only Treasury securities will have *no* credit risk, it also provides a lower expected return. Prime funds, by holding non-government high-grade debt instruments, have somewhat more risk but also provide a somewhat higher expected return. Some funds invest in state and municipal debt.

Following the failure of Lehman Brothers, investors in some MMMFs that had holdings of Lehman Brothers securities began to withdraw their money. Redemptions rose dramatically. One fund in particular, the Reserve Primary Fund, was widely reported by the financial press to hold \$785 million in Lehman Brothers securities. When Lehman Brothers failed, some investors moved swiftly to take their money out of this fund. Because of the loss on the Lehman securities, the current net asset value of the fund dropped from the standard \$1 per share to \$0.97 – a phenomenon known as “breaking the buck.” Investors in the fund experienced a loss.

In addition, the Reserve Fund instituted a seven-day delay on redemptions. Following the announcement of this delay, another firm announced that one of its funds could not meet redemptions and the fund would be closed. In the face of massive redemption requests, a MMMF needs to sell off assets – unsecured and asset-backed commercial paper in particular – in larger volumes than normal, and it was becoming increasingly difficult to find buyers for such assets.

In reaction to all this, many MMMF institutional investors have become much more risk averse. This is evident in the significant shift in investor’s preferences from prime funds to government-only funds (Figure 2) and to ordinary bank deposits. The movement out of

prime funds was quite abrupt, with nearly \$300 billion in redemptions from prime funds in the three days following the Reserve Fund announcement.

In addition, because of concern over redemptions, MMMFs that remained willing to purchase commercial paper wanted to hold only very short maturities. As Figure 3 illustrates, commercial paper issuance responded to this shift, and the vast majority of new paper has been issued for maturities of just one to four days.

These developments have unfortunate implications for the functioning of our capital markets. First, the “flight to Treasuries” has, of course, increased demand for government securities.<sup>7</sup> Second, the move out of prime funds has reduced investor demand for commercial paper and large certificates of deposit. The result has been an increase in the rate paid by even high-quality firms to raise short-term funds and higher costs to finance highly rated ABCP (Figure 4) – both of which have traditionally been viewed as relatively low risk. Third, commercial paper issuance has become of very short duration, which means that commercial paper issuers must now bear interest-rate risk or funding risk every few days, rather than every few weeks or months, as they roll over their issues.

Because of the important role that MMMFs provide in buying high-grade financial and non-financial paper, and high grade short-term tax-exempt securities, the shift in investor preferences to government-only funds makes it more difficult for even high-quality borrowers to get short-term financing. The alternate buyers for short-term high-grade securities are banks, but, as described earlier, many banks are seeking to shrink their balance sheets given recent losses. The result has been that high-grade short-term paper of all types has been very difficult to place – causing firms with good credit ratings to become concerned about meeting their short-term financing needs.

### **III. New Credit Facilities**

On September 19 the Federal Reserve announced a new credit facility – one with a long name, I might add – the Asset Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (or in shorthand, the “AMLF”).<sup>8</sup> The AMLF was created in response to the large number of redemptions at money market funds occurring in the wake of the “breaking the buck” news I described a moment ago.

You see, the large numbers of redemptions by institutional investors were leaving money market mutual funds in a quandary. Some funds had redemptions in excess of their cash and Treasury positions – so they could meet their redemption needs only by selling other assets. But these other assets, high-grade short-term paper, had become unusually illiquid, so sales could occur only at a deep discount. Money market funds were faced with the unpleasant choice between announcing they were suspending redemptions, or liquidating paper at a discount that would likely force them to break the buck.

The AMLF was designed to help provide liquidity for MMMFs to meet redemptions of institutional investors and to help support the ABCP market, a market where, as noted earlier, MMMFs were the predominant buyers of the paper.

It was hoped that the announcement of the facility to fund redemptions, in conjunction with the U.S. Treasury Department’s announcement of insurance for money market funds,<sup>9</sup> would reduce the outflows from institutional money market funds.

The facility needed to be quickly organized to help stem the immediate flow out of prime funds. The Federal Reserve Bank of Boston was charged with setting it up. It was announced on Friday, September 19. We set it up over the weekend and began making loans

the following Monday (September 22). The AMLF lending program involves a non-recourse loan to banks, provided they have purchased ABCP directly from a money market fund.<sup>10</sup>

By making the loans non-recourse, the Federal Reserve accepts the risk<sup>11</sup> associated with the collateral over the term of the loan.<sup>12</sup> Highly rated ABCP can be pledged by eligible borrowers (banks, bank holding companies, or broker-dealer affiliates of bank holding companies) to secure advances.<sup>13</sup> The Federal Reserve charges the primary credit rate (the so-called “Discount Rate”) for the loan, currently 1.75 percent.

With the announcement of the AMLF and the Treasury’s insurance, redemptions from prime funds slowed appreciably (Figure 5). However, the percent of ABCP held by prime funds did decline, as the AMLF was used to meet redemptions (Figure 6). It should be noted that on Tuesday the Federal Reserve Board announced the creation of an additional facility, the Commercial Paper Funding Facility (CPFF), in light of market conditions and to complement the efforts to date.<sup>14</sup>

The combined availability of Treasury insurance for money market funds and the new AMLF should significantly reduce the risk that outflows will force MMMFs to delay redemptions or sell paper in good standing at a deep discount in order to meet redemptions. Hopefully, over time, confidence in prime funds will be sufficient that MMMFs can remain significant purchasers of high-grade short-term paper – a role that is so important to meeting the short-term financing needs of corporations and financial institutions.

## **Conclusion**

In conclusion, I thank you for the opportunity to describe how over the past several weeks, credit markets have been in a liquidity lock, where high grade short-term paper can

only be sold at deep discounts. A liquidity lock makes it more difficult for financial firms and non-financial firms to raise the funds they need. It also makes it more difficult to finance short-term receivables, ranging from home equity loans to student loans to auto and credit card loans. Were the liquidity lock to persist, more financing would need to be done through bank loans – but, as noted earlier, banks already are struggling to adjust to a more traditional credit crunch.

Our hope is that the new liquidity facilities will make it easier for commercial paper to serve its important purposes and for financing to flow to assets that rely on issuing high-grade ABCP. With the ability to access Federal Reserve facilities, in addition to the new Treasury insurance for money market funds, investors should be less concerned that institutional money market funds will experience liquidity problems.

Well-functioning credit markets are essential for restoring economic health. These and other measures taken by the Federal Reserve should help restore confidence in credit markets, and allow the financial system to efficiently link borrowers and lenders in ways that promote economic growth.

Thank you.

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## **Notes**

<sup>1</sup> 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).

<sup>2</sup> Through tighter underwriting standards, wider interest rate margins, and reduced credit availability

<sup>3</sup> The New York Fed notes that “at its financial essence, a repo is a collateralized loan.” Ross, Westerfield and Jaffe, in *Corporate Finance* (Irwin) define a repurchase agreement as “short-term,

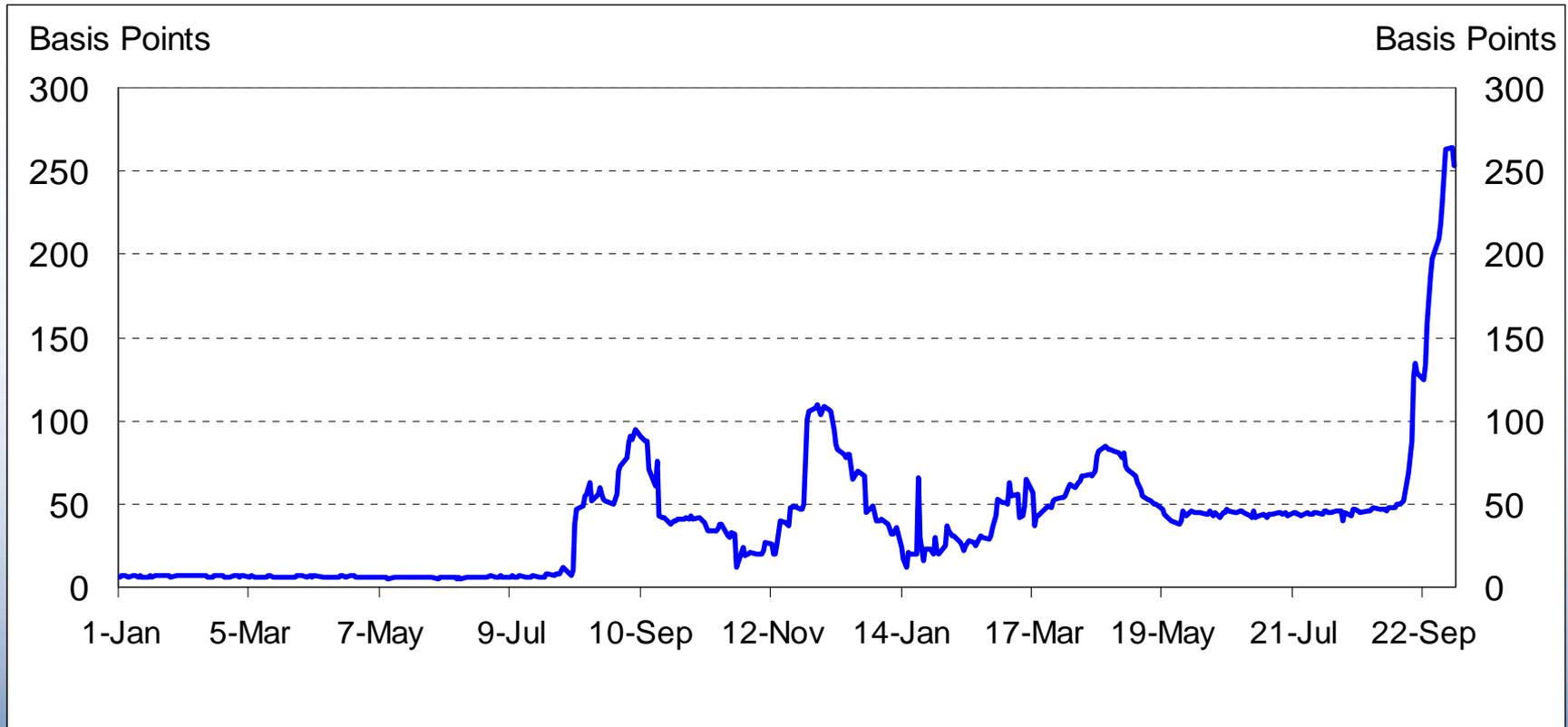
often overnight, sales of [securities] with an agreement to repurchase the securities at a slightly higher price.”

- <sup>4</sup> Overall, money market funds hold approximately \$3.4 trillion in assets. Taxable money market funds hold \$2.9 trillion in assets. Tax-free money market funds hold approximately \$485 billion in assets.
- <sup>5</sup> Under section 2a-7 of the Investment Company Act – that is, under Securities and Exchange Commission Rule 2a-7 (17 CFR 270.2a-7) issued pursuant to the Investment Company Act of 1940 (Rule 2a-7).
- <sup>6</sup> They cannot hold securities with a maturity greater than 13 months, and the average maturity of their assets cannot exceed 90 days. The securities have to be of low credit risk, and a fund can have no more than 5 percent of its assets with any one issuer.
- <sup>7</sup> This has raised the price and reduced the yield on Treasury securities, and contributed to a shortage of such securities in the marketplace.
- <sup>8</sup> An overview, with frequently asked questions, is available at <http://www.frbdiscountwindow.org/mmmf.cfm?hdrID=14>
- <sup>9</sup> The U.S. Treasury Department on September 19, 2008 announced “the establishment of a temporary guaranty program for the U.S. money market mutual fund industry. For the next year, the U.S. Treasury will insure the holdings of any publicly offered eligible money market mutual fund – both retail and institutional – that pays a fee to participate in the program.” Information on the program can be found in announcements posted by the Treasury in late September and early November, archived at <http://www.treas.gov/press/releases/archives/200809.html>
- <sup>10</sup> The ABCP must be issued by an entity organized under the laws of the United States, under a program that was in existence on September 18.
- <sup>11</sup> That is, the market, interest-rate, and credit risk.
- <sup>12</sup> This means, for example, that if the collateral value securing an AMLF advance is less than the outstanding advance, the borrower will be “made whole” (credited back the amount of loan principal and interest that would be charged to the borrower upon loan maturity).
- <sup>13</sup> Only U.S. dollar denominated issues from a U.S. issuer, and rated First-Tier Securities under Rule 2a-7 are eligible. This means that the ABCP must be rated not lower than A1, F1, or P1 by at least two Nationally Recognized Statistical Rating Organizations (NRSRO) as defined by the Securities and Exchange Commission or, if rated by only one NRSRO, the ABCP must have been rated within that NRSRO's top rating category at the time of the pledge by the eligible borrower. Such paper has historically had a very low default rate
- <sup>14</sup> The announcement and description of the CPFF is available at <http://www.federalreserve.gov/newsevents/press/monetary/20081007c.htm>

# Figure 1

## Spread: One-Month London Interbank Offered Rate (LIBOR) to Overnight Index Swap (OIS) Rate

January 1, 2007 - October 7, 2008

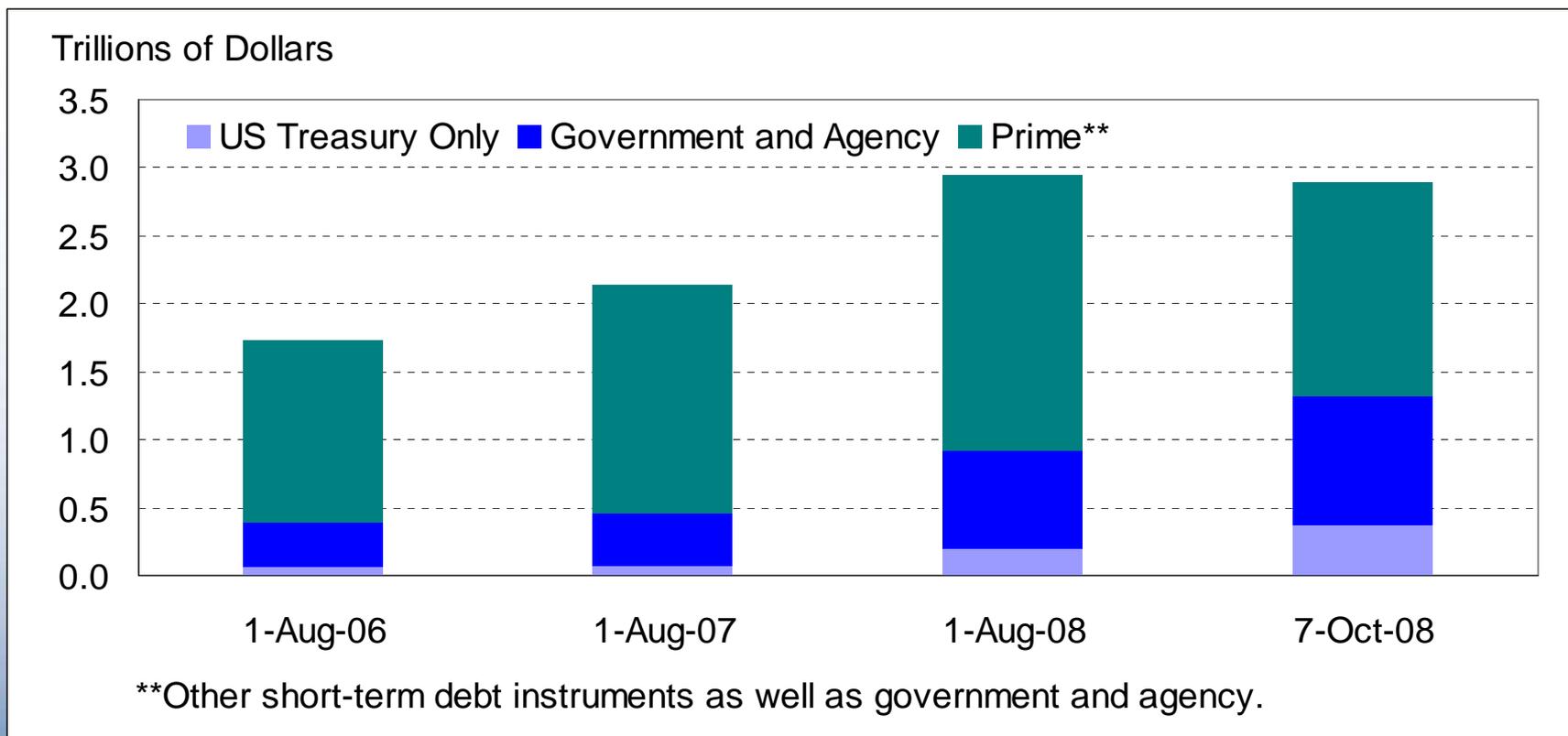


Source: Financial Times, Bloomberg / Haver Analytics

# Figure 2

## Assets of Taxable Money Market Mutual Funds by Fund Type

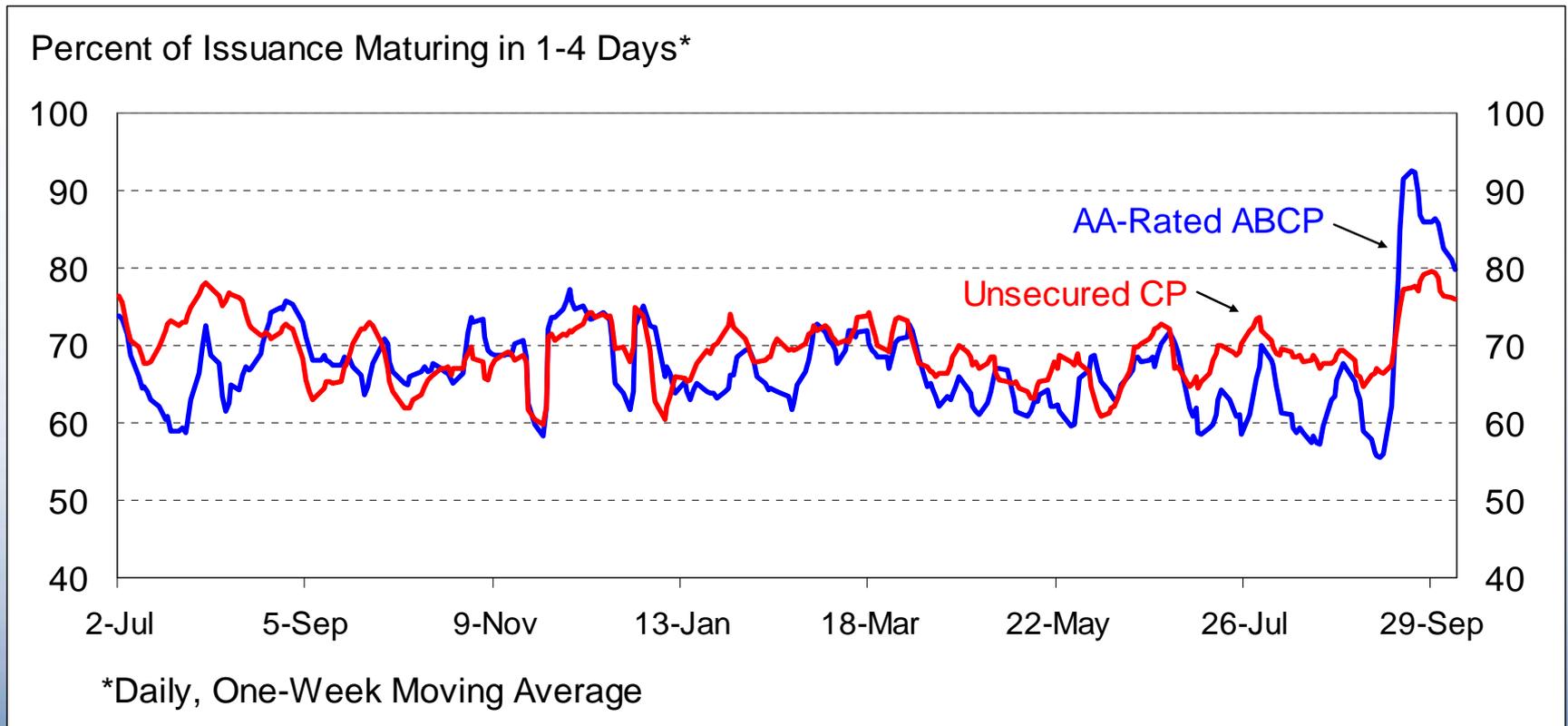
August 1, 2006, 2007, 2008 and October 7, 2008



Source: iMoneyNet

# Figure 3 Commercial Paper Issuance

July 6, 2007 - October 7, 2008

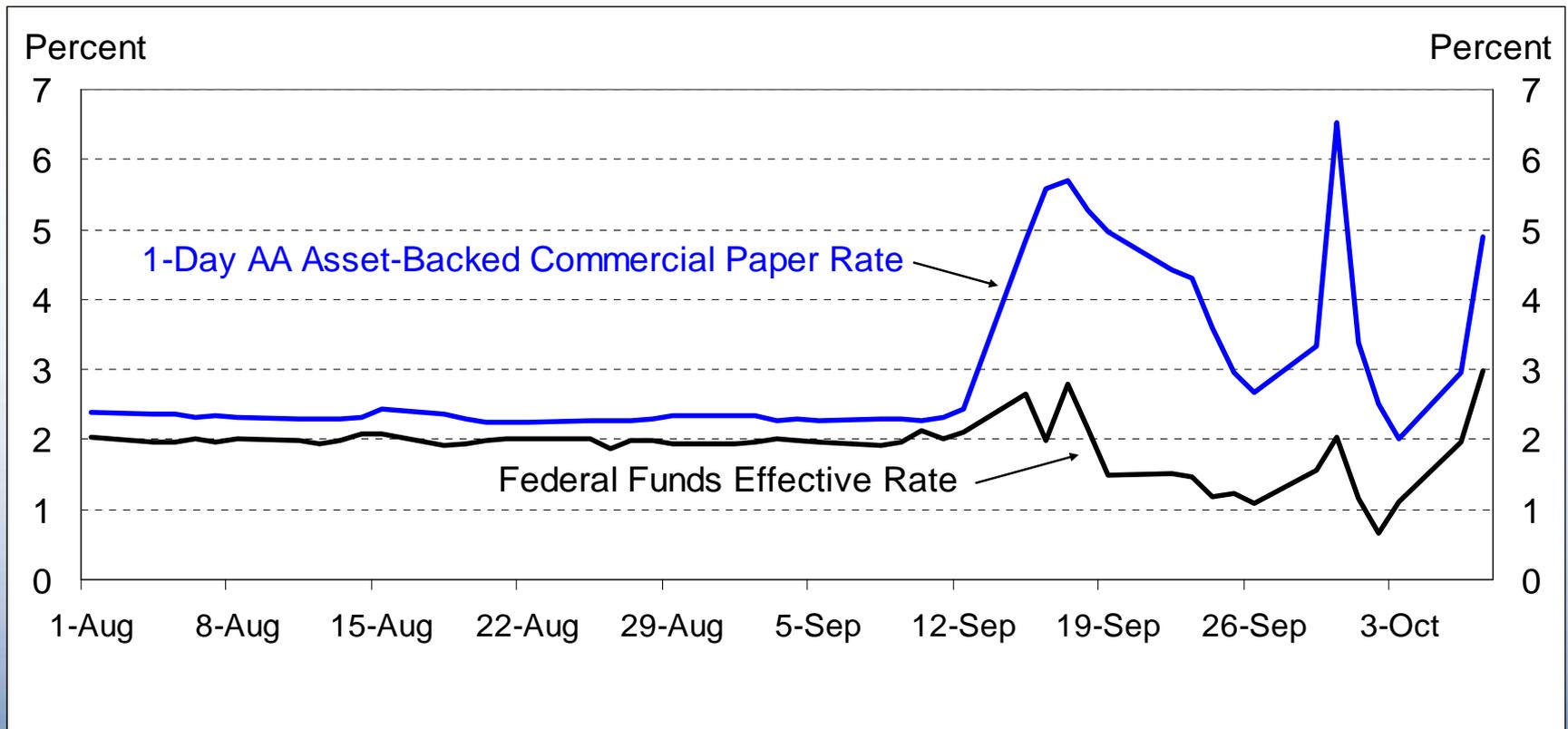


Source: Federal Reserve Board / Haver Analytics

# Figure 4

## Asset-Backed Commercial Paper Rate and the Federal Funds Effective Rate

August 1, 2008 - October 7, 2008

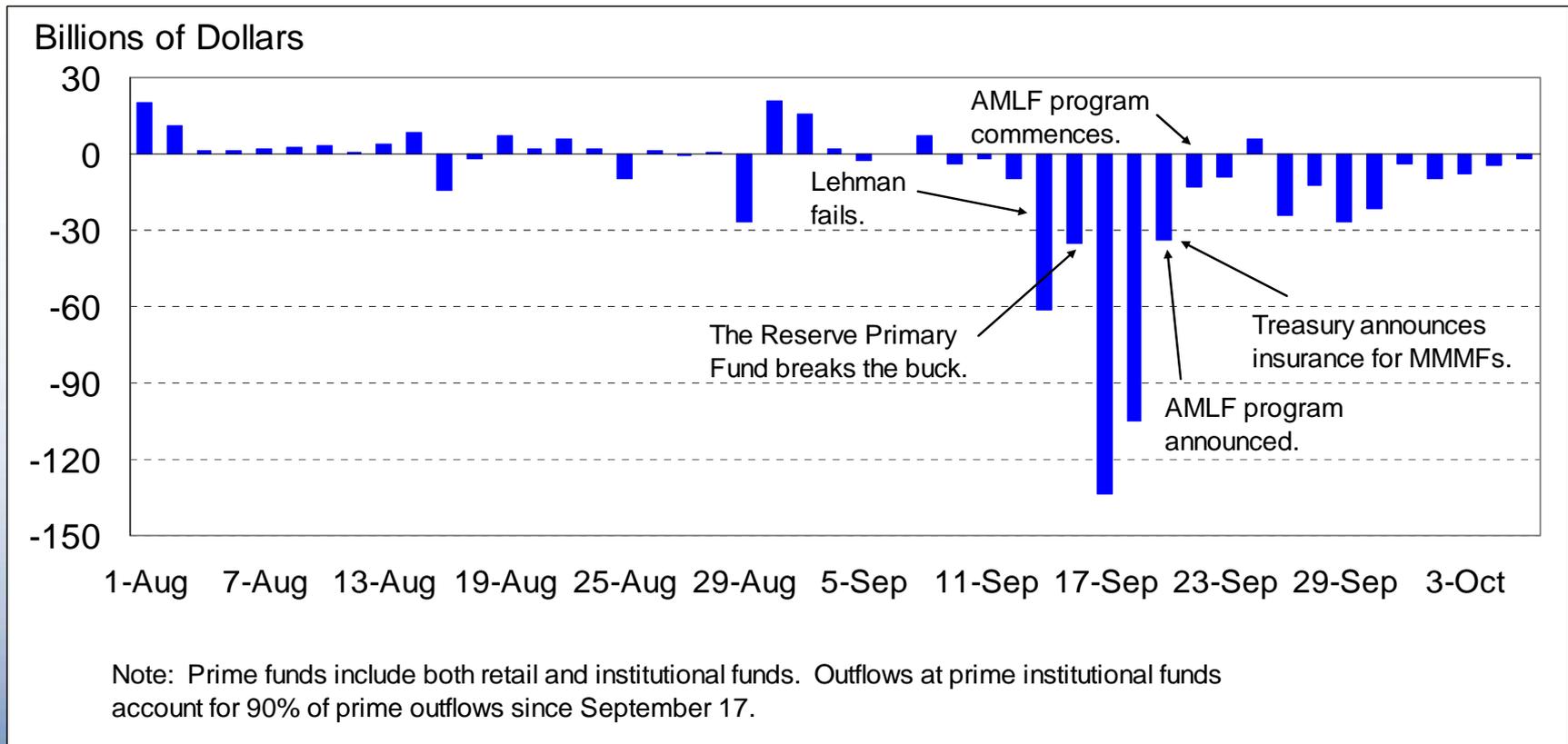


Source: Federal Reserve Board / Haver Analytics

# Figure 5

## Daily Changes in Assets in Prime Money Market Funds

August 1, 2008 - October 7, 2008



Source: iMoneyNet

# Figure 6

## Asset-Backed Commercial Paper Share of Prime Money Market Fund Assets

Weekly, June 26, 2007 - October 7, 2008

