

Market Healing

Marquette University
Milwaukee, Wisconsin
November 7, 2007

Anyone who has followed the news at all since early August is well aware of disorder in financial markets. This episode is not yet complete. The financial turmoil of 2007 will join previous market upsets analyzed with such great insight by the economic historian, Charles Kindleberger. His book, *Manias, Panics, and Crashes*, is an indispensable resource describing such episodes over the past several hundred years.

Although we know a lot about market upsets, relatively little work has been done on recoveries from them. This topic is clearly an important one today—the current episode of market turmoil is not yet completed and therefore is not yet just a matter for economic historians. Policymakers are watching closely and considering what additional policy measures, if any, would assist the market healing process.

When arriving information triggers a financial market trauma, we know that the trauma reflects, typically, a flight to quality as investors react to new information suggesting that certain assets may be worth less than previously thought. Market turmoil subsides over time as stabilizing market forces take hold, typically as investors search for bargains among assets with depressed prices. Policy responses can assist the healing process, but it is important that policy actions harness market forces and not further disrupt them. Over the longer run, lessons from market turmoil may suggest reforms to laws and regulations to reduce the probability of recurrence.

I will discuss the recent troubles in the subprime mortgage market and evidence of market

healing. My discussion of the subprime mortgage market will be brief as that topic was the subject of a speech of mine this past July.¹ The history of market upsets is valuable in understanding the current situation; I'll discuss two such situations—the 1987 stock market crash and the one initiated by the 1998 Russian default—to illustrate issues important to understanding the current market upset. I'll finish by offering some thoughts on how the healing process works and the role of the central bank.

Before proceeding, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I thank my colleagues at the Federal Reserve Bank of St. Louis for their comments, especially Daniel L. Thornton, vice president in the Research Division, who provided special assistance. However, I retain full responsibility for errors.

THE FINANCIAL TURMOIL OF 2007

By 2006 a variety of indicators were suggesting that the housing boom was subsiding. It was not yet clear, however, that the boom was a bubble that would be bursting. Sales of new single-family homes—which had increased rapidly during the previous five years—began to decline following the sales peak in July 2005, and the decline continued throughout 2006. By the end of 2006, housing starts had dropped to a three-year low. Perhaps more ominously, during 2006

¹ See Poole (2007) for a much more complete discussion of the subprime mortgage market.

FINANCIAL MARKETS

the mortgage foreclosure rate began to increase, going above 0.5 percent for the first time in the nearly 35-year history of the series. Contributing to the problem, residential property values began to decline in many regions of the United States and, according to the most recently available data, the decline is continuing. According to the Case-Shiller 10-city home price index, the first month showing a 12-month decline was January 2007, and that was the first such decline in more than a decade.²

By early 2007, evidence of difficulties in the subprime mortgage market began to emerge. Between December 2006 and August 2007 scores of mortgage companies ceased operations, either through bankruptcy or suspension of current activity. Other mortgage companies reported large losses and suspended their subprime mortgage lending. In June 2007, Bear Stearns pledged up to \$3.2 billion to bail out a hedge fund that made bad bets in the subprime mortgage market. A month later, Bear Stearns announced that two of its hedge funds that invested heavily in securities backed by subprime mortgages had lost over 90 percent of their value. Both funds declared bankruptcy on August 1.

According to a Treasury department annual survey, which was released in March 2007, on June 30, 2006, foreigners held nearly \$1 trillion in asset-backed securities. Precise data are unavailable, but a rough guess is that as of mid-2006 foreign holdings of securities backed by subprime mortgages were \$100 to 150 billion. Consequently, problems in the U.S. subprime mortgage market spread financial disorder worldwide. On July 30, the European Central Bank (ECB) announced that it was providing liquidity support for IKB Deutsche Industriebank, a large German bank, which had made substantial investments in U.S. mortgage-backed securities.

Despite all the bad news, broad financial markets were initially little affected. Although the volume of trading in asset-backed commercial paper (ABCP) peaked in late June and began

to decline, rates on such paper had increased only a few basis points before August 9. But on August 9, American International Group—one of the largest mortgage lenders in the United States—announced that mortgage defaults were spreading beyond the subprime market. This news added to concerns stemming from a July 24 announcement by Countrywide Financial Corporation—the largest U.S. originator of mortgages in 2006—that subprime mortgage problems had spread to its portfolio of prime mortgages. Between August 8 and September 13 the rate on ABCP increased by 84 basis points. While ABCP rates had declined to early August levels by late September, the volume of outstanding ABCP continued to decline.

A short digression is in order at this point. Commercial paper is a short-term corporate IOU. There are three main types of commercial paper—issues by non-financial firms, issues by financial firms such as auto-finance companies and asset-backed paper. The assets backing ABCP may be subprime mortgages, credit card receivables, auto loans or other similar assets. The maturity of commercial paper ranges from one to 120 days. In 2006, for example, 90 percent of the outstanding paper had maturities of 40 days or less and only 5 percent had maturities of 81 days or more. At the end of 2006, paper issued by non-financial firms was 9.3 percent of the total, by financial firms 37.9 percent of the total, and ABCP was 53.8 percent of the total.

The market turmoil began as investors started to flee ABCP. It is normal practice for investors in commercial paper to roll over their investment in whole or in part, depending on their own need for funds, but in August investors who might have routinely rolled over their investment in ABCP began asking for redemption as the paper matured. Moreover, investors tended to flee all types of commercial paper and not just paper backed by subprime mortgages. Their unwillingness to roll over maturing paper put tremendous pressure on issuers to find funds to redeem maturing issues. Many issuers turned to commercial

² The Case-Shiller 20-city index is also declining but that series goes back only to 2000.

banks, drawing on backup lines of credit. Investors had to do something with the funds on maturing CP, and they tended to buy short-term Treasury securities. Thus, the flight to quality drove up the rates on CP and drove down the rates on Treasury issues.

Two figures can help to display the scale of the market disruption. Figure 1 shows the federal funds rate and the Treasury bill rate. Vertical lines mark some of the key events. The extent of credit market volatility is evident. Figure 2 shows what happened to the volume of commercial paper outstanding. The scale of the contraction is obvious, as commercial-paper issuers had to redeem scores of billions of dollars worth.

On August 9, both the European Central Bank and the Federal Reserve injected large amounts of liquidity into the financial market. On August 9, the ECB injected €95 billion and the Fed injected \$24 billion; subsequently, the two central banks engaged in further large injections of funds.

The Fed's injections of funds were designed to keep the federal funds rate near the target rate set by the Federal Open Market Committee (FOMC), the Fed's main monetary policy body. However, given the volatile market situation, the Open Market Desk tended, appropriately, to provide funds generously. The funds rate traded high relative to the FOMC's target of 5.25 percent on the 9th but declined sharply on the 10th.

Another indicator of market turmoil was the rate on short-term Treasury bills. These rates declined in the flight to quality. The 1-month T-bill rate declined by 44 basis points on August 15 and by another 105 basis points on August 16. On August 17, the Fed announced a 50-basis-point cut in the discount rate.

Market turmoil originated in the market for securities backed by subprime mortgages but then spread to five important market segments beyond the asset-backed securities market. The first was the commercial-paper market more generally. The volume of ABCP outstanding—much of which was mortgage backed—peaked in the week ending August 8. By mid-October, the outstanding volume had declined by \$281 billion, or nearly 25 percent.

The impact on financial and non-financial commercial paper was less severe but significant. The volume of non-financial commercial paper outstanding declined by nearly 15 percent, while the volume of financial paper declined by about 5 percent from early August to mid-October. Despite the impact on the volumes of non-financial and financial commercial paper outstanding, the impact on the rates of these securities was relatively modest. Rates on both types of CP remained near their pre-August 9 level until early September and then began drifting lower. These rates declined by about 25 basis points following the FOMC's 50-basis-point cut in the federal funds rate target on September 18.

Another indication of market turmoil was that rates on certificates of deposit (CDs) and Eurodollar deposits rose sharply on August 9 on news that the subprime problems were spreading to the broader mortgage market. CD and Eurodollar rates rose because both of these assets are used by banks and other depository institutions to support their loan portfolios. Banks' need for liquidity drove these rates higher. Both rates declined when the FOMC reduced its target for the federal funds rate on September 18, but the spread of these rates over the funds rate target did not return to its pre-crisis level.

The financial turmoil spilled over to rates on bank deposits in foreign countries. That spread occurred partly because of the close relationship between CD and Eurodollar deposit rates and similar assets in other countries and partly because many international investors held securities backed by U.S. subprime paper. Deposit rates in Canada, the United Kingdom and the Euro area were affected similarly to the CD and Eurodollar rates in the United States. Danish and Japanese rates changed little on average, but became much more volatile.

The flight to quality had a dramatic effect on rates in the U.S. Treasuries market. T-bill rates declined relative to rates on assets with default risk. The flight to quality is most evident at the shorter end of the yield curve. The flight to quality at the longer-end of the yield curve occurred earlier. The spread between corporate AAA bonds

Figure 1

Subprime Crisis: Funds Rate and Funds Rate Target

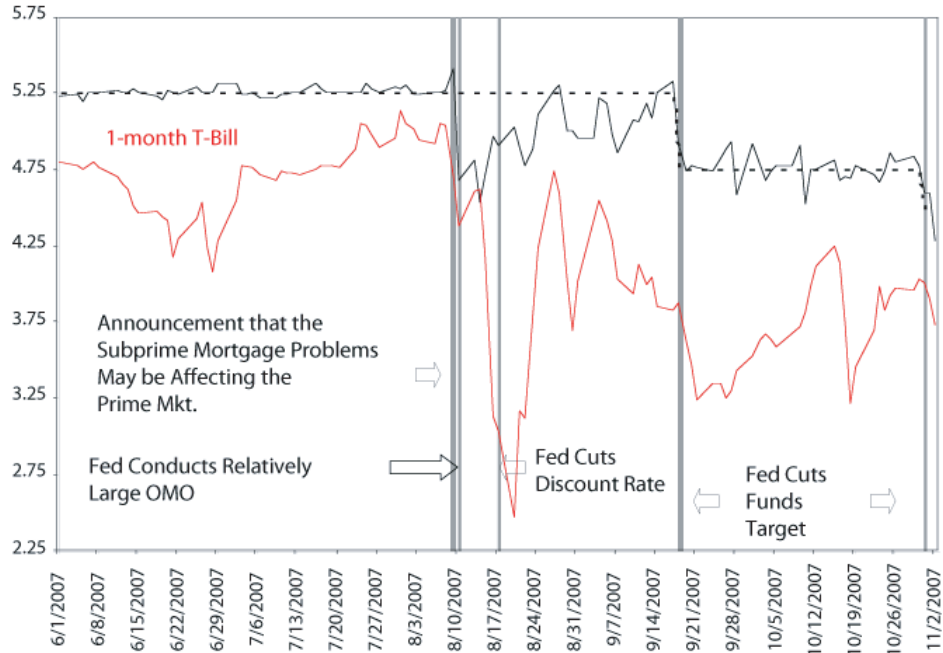
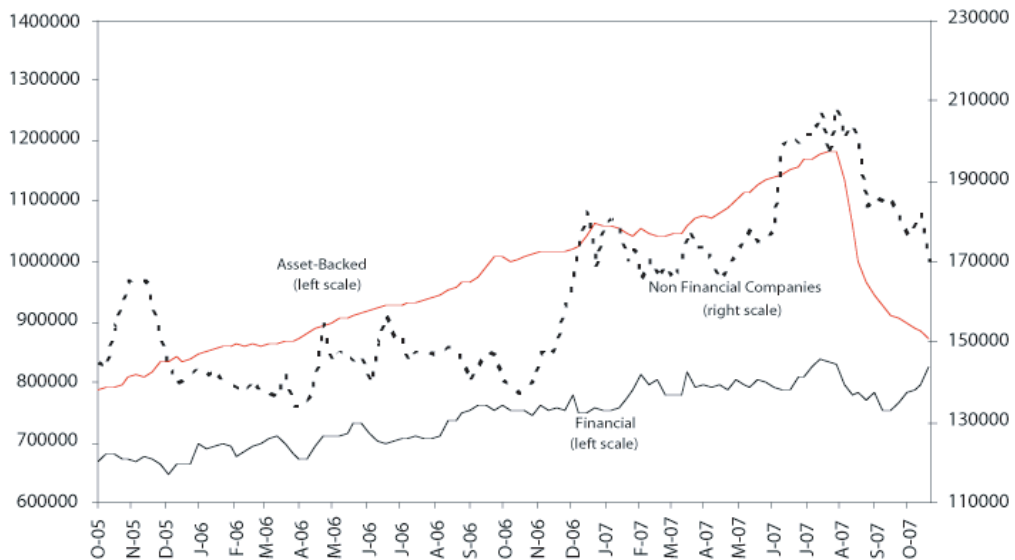


Figure 2

Total Outstanding Commercial Paper (s.a.)



and BBB bonds over the 10-year Treasury yield widened significantly in mid-July. The AAA spread had been about 60 basis points and the BBB spread about 120 basis points, but the two spreads widened to about 75 and 165 basis points, respectively, and have fluctuated in a wide range around these levels since then.

The disorder also showed up in the federal funds market, as is evident in Figure 1. The funds rate spiked above the FOMC's target of 5.25 percent on August 9 and then fell below the target the following day. Given the market disruption, the Fed's Open Market Desk supplied reserves liberally, and the funds rate remained below the target until September 14, the Friday before the FOMC reduced the target from 5.25 to 4.75 percent on September 18. The funds rate has traded around the target since then, but in a wider band and is more volatile than it was before August 9.

I can summarize key features of the market upset this way. The turmoil began with disclosure of large losses on securities backed by subprime mortgages. Commercial-paper investors began to flee asset-backed commercial paper, putting their funds instead into safe assets, especially Treasury securities. Companies that had relied on funding their assets by issuing commercial paper were stressed to come up with funds to redeem maturing paper. They turned to a combination of asset sales, which put downward pressure on certain asset prices, and to bank loans, which put pressure on banks to find the funds to fulfill their commitments to provide backup credit to commercial-paper issuers. The flight to quality was so intense that many investors initially turned away from all commercial paper, whether backed by subprime mortgage assets or not.

ROLE OF THE FED

The Fed's objective is to promote maximum sustainable economic growth by fostering price stability and minimizing, to the extent possible, fluctuations in employment. The Fed can contribute to these objectives by helping financial markets to operate in an orderly and efficient

manner. The Fed promotes financial-market efficiency through various regulatory measures and by providing the markets with ample liquidity in times of stress.

Most of the time, financial markets are highly efficient. The Fed's role is to conduct monetary policy effectively in pursuit of the objectives of price and employment stability. The Fed tries to conduct open market operations with as much regularity and predictability as possible, to provide a stable base for markets to trade a wide range of financial assets efficiently.

On occasion, however, events disrupt normal market processes and special Fed action is helpful. The major role for the Fed here is to see that there is adequate liquidity in times of uncertainty and to provide additional short-term liquidity when there is a legitimate need for it. There are numerous instances when the Fed has provided extra liquidity. The most dramatic example is the attack on the World Trade Center, when the Fed injected as much as \$140 billion for a few days to support financial market transactions. A much less well-known example is that the Federal Reserve Bank of New York advanced the Bank of New York \$22.6 billion overnight on November 21, 1985, because of a computer software failure at the Bank of New York. The liquidity supplied in August 2007 through open market operations and the discount window is just the latest example of the Fed supplying short-term liquidity to support financial markets in unusual circumstances.

There are times when providing additional liquidity is either unnecessary or inadequate. A dramatic example of such a time is the stock market crash on "black Monday," October 19, 1987. Before the markets opened on October 20, the Fed announced that, "The Federal Reserve, consistent with its responsibilities as the Nation's central bank, affirmed today its readiness to serve as a source of liquidity to support the economic and financial system." The Fed made clear that depository institutions could avail themselves of the discount window as needed, even though doing so might not meet all the usual administrative requirements then in effect.

FINANCIAL MARKETS

It was important for the Fed to make clear to banks that discount window funds were available. However, few banks actually borrowed. Before the crash, borrowing during the week ending October 15 averaged \$1.147 billion; for the week ending October 22, average borrowing was only \$219 million higher. Liquidity turned out not to be an issue.

Concerns that the stock market crash might spread to the economy more generally and affect economic growth prompted the FOMC to reduce its target for the federal funds rate by 50 basis points on November 4, 1987. The FOMC cut the target fed funds rate despite the fact that inflation was running at an unacceptably high rate of over 4 percent. The FOMC reduced the target by an additional 30 basis points by February 11, 1988.³ Once the crisis had passed, the FOMC began raising the target fed funds rate. By May 1988 the target was only slightly below its pre-crash level. With the economic crisis past, the FOMC was able to resume its effort to stabilize the price level. By late June 1988 the funds rate target was above its pre-crash level.

Another market upset occurred when Russia defaulted on its sovereign debt on August 17, 1998. In and of itself, this event posed no specific liquidity problems for the U.S. economy. The picture began to change when, on August 26, it was disclosed that George Soros' Quantum Fund lost \$2 billion in Russian markets. The following day the spread between AAA rated corporate bonds and the 10-year Treasury yield increased 10 basis points. The spread continued to widen as news of fallout from the Russian default intensified. The spread widened to 99 basis points on September 2, when Long Term Capital Management (LTCM) announced that market developments had wiped out about half of its capital, which was minimal to begin with. While hedge funds can lose capital for a variety of reasons, it was well-known that hedge funds that invested heavily in emerging markets, especially Russia, suffered large losses.

The spread rose further to 114 basis points on September 23, when the Federal Reserve Bank of New York helped organize a rescue package for LTCM. By that time, LTCM's equity had declined by nearly 90 percent. The rescue package consisted of a capital infusion by several investment banks. In return, the participating banks got a 90 percent share in the fund and a promise that a supervisory board would be established.

In 1998, the economy was experiencing strong growth and inflation was well contained. In this environment, concerns that the effects of the Russian default might spread to the real economy prompted the FOMC to reduce the funds rate target by 75 basis points, in three steps of 25 basis points each, between September 29 and November 17.

In 1999, as economic growth remained strong and inflation pressures began to rise, the FOMC began reversing its actions. By mid-November 1999 the fed funds rate target had reached its pre-Russian default level. By the spring of 2000, the funds rate target was 6.5 percent—100 basis points higher than before the Russian default.

LOOKING AHEAD

The 1987 and 1998 episodes, and others, provide the best picture we have of how the current market turmoil is likely to be resolved. Each episode of financial turmoil has its individual characteristics but they also have common features.

As we think through the current situation, it is useful to separate the issues of distress in the housing market from financial turmoil beyond housing. The woes in the housing market may continue for some time. Home prices are declining. Sales of single-family houses have been declining and the inventory of single-family houses for sale has been rising. No one should feel much confidence in a forecast as to when the housing market will stabilize; the conventional view among housing experts and economic forecasters seems to be around the middle of 2008.

³ During this period, the FOMC sometimes changed the intended fed funds rate by amounts other than in multiples of 25 basis points. There were actually two changes, one of 18.75 basis points on January 27 and another of 12.5 basis points change on February 11. I have added these together and rounded off in the text.

On the financial side, new subprime mortgages are much less readily available than in the past. Lenders have taken steps to avoid the lending practices that generated the crisis in the subprime mortgage market, and we can be confident that underwriting practices have improved in all segments of the mortgage market. However, it will take several years to resolve the problems with outstanding subprime mortgages and securities backed by such mortgages. Loan delinquency rates, which have been trending up since mid-2006, are likely to continue to rise. Many homeowners will lose their homes to foreclosure, and investors will have to write down the value of their assets backed by subprime mortgages.

What creates generalized financial turmoil out of a market problem is that investors flee riskier assets of all types, with little regard to whether the assets are connected to the original problem or not. However, a flight to quality typically does not last very long. Investors start to make the relevant distinctions as they search for good assets trading at distressed prices.

That process is certainly observable today. Broader financial markets are showing signs that the financial market upset is beginning to resolve itself. Rates on short-term T-bills have risen and are at more normal levels relative to the federal funds rate. Rates on many types of riskier assets have declined. There appears to be only a modest effect on rates in the conforming mortgage market. The Freddie Mac index for the conventional 30-year mortgage rate was 156 basis points above the 10-year Treasury rate in June; at the end of October, the spread was about 30 basis points higher. Although the spread is a bit higher, the absolute level of the conforming mortgage rate in October was roughly 25 basis points below its June level. However, the rate on prime jumbo mortgages—mortgages whose size is above the conforming mortgage limit of \$417,000—was about 100 basis points higher than the rate on conforming mortgages from mid-August to mid-September. The normal spread is about 25 basis points. A sign of progress in market healing is

that the jumbo spread is currently about 60 basis points.

The implications of the market upset for the macroeconomy are not clear. Residential investment, which accounts for about 5 percent of GDP, will continue to be a negative for economic growth. Consequently, the decline in residential investment, per se, will have a modest effect on economic growth going forward.

At issue is the potential effect of the housing decline on consumer expenditures. The loss of wealth associated with the decline in housing prices, as well as the fact that mortgage payments will absorb a larger portion of disposable income for some consumers, might cause consumption—the largest component of GDP—to grow at a significantly slower rate. While the effect of a change in wealth on consumer expenditures has been notoriously difficult to identify empirically, some recent evidence suggests that changes in housing wealth do affect consumption.⁴

THE HEALING PROCESS

What is the process by which financial markets return to normal functioning? I have already emphasized that the most fundamental aspect is that investors quickly begin drawing distinctions between assets with prices depressed for good reason and those depressed due to a generalized flight to quality. It does make sense for securities backed by subprime mortgages to trade at low prices, because the default rate on subprime mortgages is high and perhaps rising. Even here, however, not all subprime mortgages were created equal. Some firms originating these mortgages had much better underwriting practices than others. It is logical that investors will now distinguish between securities backed by subprime mortgages originated by solid underwriters and those by Sam's Corner Mortgage Company.

Experience certainly suggests that central bank rate reductions help spur the healing process. Why should that be so?

⁴ For example, see Bostic, Gabriel and Painter (2005) and Catte, Girouard, Price and Andre (2004).

FINANCIAL MARKETS

One thing that happens is that cuts in the policy rate—the federal funds target rate in the United States—serve to reduce the absolute level of rates on riskier securities even though spreads may remain higher than before. In the United States, comparing the July 2007 average with the average for the week ending November 2, the AAA corporate bond rate fell from 5.65 percent to 5.15 percent and the BBB corporate bond rate fell from 6.34 percent to 6.09 percent. The same point applies to rates on many other risky assets. Spreads against Treasuries are higher but the absolute level of yields has returned to pre-turmoil levels, or below in some cases.

Another thing that happens as a consequence of central bank action is an improvement in confidence. Stock market volatility might serve as a good measure of confidence. The stock market has been quite volatile since its peak on July 19. By August 15, the S&P 500 stock index had declined by 8.3 percent from its peak. Stocks surged on September 18 following the FOMC's action reducing the fed funds rate target by 50 basis points. Subsequently, other news led to sharp stock declines.

Despite market volatility, Fed actions have demonstrated to market participants throughout the economy—those in non-financial firms as well as those in financial firms—that the Fed will not be an idle bystander. The Fed needs to be careful to do what is necessary, but not more. Excessive rate reductions would run the risk of increasing inflation in the future and inducing further market volatility as the market came to fear future rate increases to deal with rising inflation. Market confidence that the Fed has it about right and is prepared to take appropriate further action helps in the healing process.

Let me also offer a conjecture. A cut in the federal funds target rate changes the nature of near-term risks facing market participants who take positions in risky securities. I have emphasized that the willingness of market participants to take risks is essential to the healing process that restores normal trading in risky assets. When the Fed cuts its target for the federal funds rate, market participants know that the FOMC's deci-

sion at its next meeting will be either to leave the rate unchanged or to cut further. Barring unusual circumstances, the FOMC would not consider a rate increase just after cutting its fed funds rate target. This approach to policy is appropriate when market conditions are fragile because market participants must be confident that they can take positions without the risk that the Fed might raise rates, which would reduce asset values, in the near term. Investors can then concentrate on determining the fundamental value of risky assets and can work on deals to buy such assets from holders forced to sell by their own impaired liquidity and capital positions. As investors accumulate profits from these trades, others are attracted and normal market functioning resumes.

As markets return to normal, Fed policy can also return to its normal focus on the long-run needs of the economy. In June 1999, for example, the Fed started to undo the rate cuts introduced in the fall of 1998. It is impossible to determine in advance what the schedule should be for the return to normal monetary policymaking. In current circumstances, it could be that the downturn from the housing industry will spread to other sectors, which might require that recent rate cuts not be reversed or even that additional rate cuts would be in order. Conversely, as markets heal, the policy situation may return to one resembling that of a few months ago in June, before subprime problems began to have significant market impact.

Although I am unable to forecast the future course of the FOMC's target for the federal funds rate, I am confident that normal market functioning will return to the financial markets. Recent weeks show clear progress. There could be setbacks along the way, but the inherent efficiency of U.S. financial markets will ultimately dominate the outcome.

REFERENCES

Bostic, R.; Gabriel, S. and Painter, G. "Housing Wealth, Financial Wealth, and Consumption: New Evidence

from Micro Data.” University of Southern California Working Paper, 2005.

Catte, P.; Girouard N.; Price, R. and Andre, C.
“Housing Markets, Wealth, and the Business Cycle.” OECD Economics Department Working Paper 394, 2004.

Poole, W. “Reputation and the Non-Prime Mortgage Market.” Presented to the St. Louis Association of Real Estate Professionals, St. Louis, MO, July 20, 2007. http://www.stlouisfed.org/news/speeches/2007/07_20_07.html.