



Early Lessons From Recent Financial Turmoil

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It is a pleasure to be with you today.

My goal is to share with you what I see as some “early lessons” from the ongoing period of turmoil in real estate and credit markets.¹ It is important, given the turbulence we have lately experienced, to begin to analyze and act on such lessons as early as possible.

First, some background. For the past two years, the housing market has gone from bad to worse. What began as a mild reduction in residential investment² at the start of 2006 has accelerated, with residential investment declining by more than 20 percent during each of the last two quarters of 2007.

Beyond the obvious and intense pain for distressed borrowers, a noteworthy aspect of this downturn in residential investment has been its impact on financial markets.

Previous housing downturns caused problems for savings institutions and banks that were generally smaller than the large financial institutions being affected today. This downturn has primarily affected financial markets and large financial institutions. Large financial institutions have lost billions of dollars, and in some cases tens of billions; and some are forecasting significant additional losses.³

But this is not just a Wall Street problem. Our real concern is the ways those problems in financial markets translate back to all of us.

After a brief background on the genesis of the current financial turmoil, I am going to discuss three issues that I am sure you are increasingly seeing reported on the business pages of your national and regional newspapers:

- First I will discuss why the **accuracy of ratings** on securitized *mortgage* products have been so much less reliable than ratings for *corporate*-debt securities, and the lessons we should draw from those differences. Here is a peek at the main message: uncertainty surrounding ratings has caused a variety of markets to become less liquid. Less liquid credit markets can hurt borrowers of every type. Problems with the accuracy of ratings had their roots in the determinants of the ratings – and so we need ways to differentiate ratings that have different “drivers” in terms of the credit risk on the underlying assets. We need for example, to differentiate ratings on assets like corporate securities from ratings on assets whose ratings histories and price-drivers may be quite different, and less well understood, like certain mortgages-related securities.

- Second, I will touch on the **difficulty in pricing** complex financial instruments, and actions that might help with transparency and pricing of these products in the future. Again, the main message: As I see it, the recent difficulty in pricing assets should make investors and financial intermediaries consider whether such complexity is necessary, and whether some of these instruments should be more standardized or possibly moved from dealer markets to exchange-traded instruments.

- Third, I will discuss the continuing **problems in the housing market**, and touch on the ongoing discussion of policies that might help mitigate those problems. Here I'll suggest that, if housing prices continue to fall, we will need to increasingly consider programs for those with negative as well as positive equity in their houses.

Background On Recent Financial Turmoil

First, a bit of background. In early 2007 it became apparent that delinquencies on subprime⁴ mortgages issued after 2004 were experiencing problems at a more rapid rate than would be expected, given the rather benign economic environment. We began to see an elevated rate of subprime delinquencies [**Figure 1**].

In July of 2007, rating agencies began to highlight the fact that subprime mortgages that had been securitized – a process I'll describe in a moment – were performing poorly, leading to downgrades for securities that had significant exposure to the subprime market. Just as investors became more uncertain about valuing these

securities, it became clear that subprime mortgages were part of various financial instruments that had been viewed as generally low risk.

Securitization relied on the reasonable premise that subprime loans might be more risky than prime, but the majority would not default – and higher interest rates and fees would compensate for those that did. Subprime loans were bundled for investors and “riskiness” was tiered. Investors in the least risky tiers were thought to be well protected from losses.⁵ **[Figure 2]** Unfortunately, underlying assumptions proved inaccurate.

The market for short-term asset-backed commercial paper (ABCP), short-term securities used to finance a variety of loans from student loans to home equity, has been particularly impacted **[Figure 3]**. As problems with mortgage-related loans emerged, some investors became reluctant to continue lending in the ABCP market. This reduction in the availability of short-term funds caused the rates on ABCP to rise; and also forced some financial institutions to buy back ABCP that they could no longer refinance, bringing it onto their balance sheets. The combination of uncertainty over the appropriate rating of mortgage-related securities and the expansion of bank balance sheets caused significant pressure on the availability of short-term credit. In addition banks, as liquidity providers, were expanding their balance sheets in other areas, much of which was not anticipated prior to the financial turmoil. Some banks have had to take write-downs on some assets, and the losses in combination with involuntary growth in assets have made some banks more reticent to expand their balance sheets further.

An indication of the difficulties in short-term financing markets was the marked elevation of the London Interbank Offered Rate (LIBOR) relative to the comparable U.S. Fed Funds target rate. LIBOR is the rate charged in a key international market for short-

term lending between banks. The elevated LIBOR rate not only made it difficult for banks to borrow short-term, but also raised the rates on loans tied to LIBOR -- notably including most subprime mortgages, corporate loans, and credit card debt.

Indeed, while the initial trigger for the financial turbulence was related to subprime mortgages, the uncertainty surrounding ratings of complicated financial instruments has caused disruptions in a variety of other assets and markets that depend on securitization – including state and municipal financing, student loans, and commercial real estate. The effects have been felt up and down Main Street, as well as in some markets overseas.⁶

I. The Role Of Credit Ratings

With that as background, I'd like to turn to my first subject today – the role played by the credit ratings used by investors to gauge the credit risk on securities.

The use of credit ratings for corporate bonds has been longstanding and generally free from substantial concerns about the ratings' accuracy, with a few notable exceptions.⁷ So I think it is useful to consider the similarities and differences between rating *corporate* securities and *mortgage* securities, where the accuracy of ratings has been called into question. This is particularly important because much of the current turmoil is driven by investor uncertainty in rating difficult-to-value financial assets.

Relative to mortgage securities, ratings on corporate securities have been time tested. Downgrades have been quite modest. Defaults have often been tied to recessions or problems specific to a given firm, such as excessive leverage or poor management

[Figure 4]. In addition, investors in corporate securities can rely on a wealth of external sources to verify the health of a firm.⁸

Corporate ratings have generally performed well. Despite the recent financial turmoil, corporate default probabilities in aggregate remain quite low **[Figure 5]**. With relatively few downgrades, and delinquencies, the corporate balance sheet has held up better than that of the consumer – although the recent widening of spreads for lower-grade bonds gives one pause **[Figure 6]**.

The mortgage market is quite different. Most mortgage securities are based on a diversified pool of underlying mortgages. Many investors assumed that there would be significant benefits from diversification, that regional real estate shocks would be dominated by local factors, and that national home prices were very unlikely to decline. These assumptions proved to be wrong, resulting in widespread downgrades of mortgage securities.

The housing price assumption in particular has been critical, and many investors may have significantly underestimated a potential national housing price decline and its effect on defaults. The S&P Case-Shiller national home price index fell 10 percent from its peak in the second quarter of 2006 through the fourth quarter of 2007. Home prices are down in every one of the 20 large metro areas covered by the Case-Shiller national home price index.

In contrast to corporate securities, corroborating information on mortgage securities is not as readily available. There is no equivalent to equity analysts and equity prices to give investors updated market information. The information needed to analyze

the individual mortgages in the pool can be expensive to obtain. So investors are more reliant on rating agencies than they are with corporate securities.

The problems in the mortgage market highlight the need for caution where there has been limited ratings history, where the underlying characteristics that drive the asset's price may not be fully understood or anticipated, and where evaluations cannot be easily corroborated by others such as equity analysts.⁹ Certainly one way to highlight these differences is to differentiate ratings on corporate securities from ratings on assets like mortgage-backed securities.

II. Transparency and Disclosure

Now I'd like to turn to a second area, transparency and disclosure. The heightened uncertainty surrounding ratings has been aggravated by the lack of transparency in the pricing of complex financial instruments. Because as many of the more complicated financial instruments have ceased active trading, determining a market price has become quite difficult.

While defaults in housing move rather slowly, the pricing of financial assets has moved much more dramatically, causing many financial institutions to significantly change their expectation of losses from these complex financial instruments. In fact, the highest-graded securities are selling at a very significant discount [**Figure 7**], implying a significant risk premium for holding even the highest quality securities of some complex financial instruments.

The opaqueness in pricing has caused a variety of complications:

- First, many securities have become illiquid, and sales are only occurring at “distress” pricing.¹⁰

- Second, the uncertainty in pricing has caused a loss of confidence in firms that provided insurance on high-graded securities. This has been a problem for certain municipal securities, and instruments known as auction-rate securities¹¹ and variable-rate demand notes¹² where uncertainty in bond insurance has led to changes in pricing for securities previously thought to have little risk of default.

- Third, banks often provide liquidity backstops should securities trading become illiquid, and the current market turmoil is leading banks to be more cautious in lending because they are not sure if or when investor demand could evaporate, requiring significant extensions of bank credit.

- Fourth, certain markets have been disrupted, as investors avoid complex securities where liquidity could be a problem. The recent reports of problems in auction rate securities, suggest that financing for all sorts of entities – universities or hospitals or some municipalities – can get a lot more expensive when investors lose confidence in the pricing and liquidity of financial instruments.

So, what lesson should we derive from some of these complications?

First, some financial products were not well designed to withstand liquidity problems. To avoid paying banks fees to provide a liquidity backstop, many financial products of recent vintage included provisions to force liquidation when necessary to insure payment to the holders of the higher-graded securities (or slices of securities). This structure was used, for example, by structured investment vehicles (SIVs)¹³. However, due to the recent financial stress, assets of SIVs could not be liquidated at prices felt to be reasonable. Broadly speaking, products should be structured to better weather periods of illiquidity, and ratings models should take better account of liquidity risk.

A second way to improve price discovery would be to have greater uniformity in financial products. Standardization of products makes it much easier to price and trade securities. A case in point: many of the positive innovations in mortgage markets resulted from more uniform standards for conforming loans. Standardization helped insure minimum underwriting standards.¹⁴ Non-conforming mortgage markets, as well as other securitized assets, might well benefit from greater uniformity and standardization so that pricing is less idiosyncratic to the particular security an investor holds.¹⁵

A third possibility is to seek more trading of financial products in exchanges rather than through dealers. Securities that are consistent enough to trade on an exchange are more likely to have market prices that all participants can use.¹⁶

Finally, investors should give careful consideration to whether such complex financial products are necessary at all. With simpler and more understandable structures,

the difficulties in obtaining market prices are likely to be significantly reduced, as are the consequent uncertainties like those we are currently facing.

III. The Housing Market

Now I'd like to turn to the continuing problems in the housing market, and a few thoughts on policies might help mitigate those problems.

The housing market was the genesis of current financial turbulence, and a key point is that significant further declines in home prices could greatly complicate efforts to resolve current problems. As housing prices fall, loan-to-value ratios will rise, in some cases exceeding 100 percent, reducing the number of borrowers that qualify for existing government programs like Federal Housing Administration (FHA) loans.¹⁷ Thus when considering ways to mitigate the current housing problem, it is useful to consider borrowers that still have positive equity in their house, as well as those that do not.

Fundamentally, I encourage worried borrowers who hold high-rate loans to approach a responsible lender about refinancing. I also encourage lenders to reach out to borrowers, and to take a fresh look at the state and federal programs that can be of assistance.

In recent months we estimated that a fair number of borrowers with subprime mortgages may be able to refinance into a more affordable loan, because they had good credit scores and some home equity when they got a fully documented loan on an owner-occupied property. As time goes by, however, declining home prices are eroding borrowers' equity, and some are experiencing financial difficulties or mounting debt as

the economy slows. These forces complicate the picture, and narrow the pool of readily “refinanceable” subprime loans.

Given the worsening housing scene, Boston Fed researchers recently updated prior work in this area in an attempt to calculate the share of people with subprime loans who might qualify for FHA programs. They looked at subprime loans in Rhode Island, Connecticut, and Massachusetts that had full documentation, were owner occupied, had a loan-to-value (LTV) of no greater than 97 percent, met current FHA loan-size limits by county, were never 60 days delinquent, and had a maximum debt-to-income ratio (including other forms of debt) of 45 percent.¹⁸ This approximates current FHA standards.

They estimate that about 16 percent of borrowers with subprime loans would meet those criteria. However, over time this pool is likely to shrink, as the number of delinquent borrowers has been rising and housing prices have been falling, likely reducing the number of qualified borrowers. For borrowers that could convert their subprime loan to an FHA-insured loan, saving significant money from converting from a subprime to a prime rate is an alternative that should be considered.

One refinance option is the Mortgage Relief Fund (www.MortgageReliefFund.com). **[Figure 8]** Five large banks joined forces to set up this program, with the encouragement of the Federal Reserve Bank of Boston, to join forces in reaching out to borrowers with high-rate loans. The banks can help borrowers explore refinancing into a more-affordable loan – maybe an FHA loan, a state-guaranteed loan, or a conventional loan. We believe a number of community banks will join the effort in the coming months.

With two months completed, and realizing the lags from first contact on a mortgage to closing, the banks have logged over 1,000 inquiries, taken in more than 50 applications, made 115 referrals to nonprofit housing counseling services, and are now starting to close some of those loans from the first applicants – with the first dozen loans having recently closed. It is a modest start, but this month we are pursuing a second wave of outreach, and the banks are pursuing an additional advertising push, especially in areas with higher concentrations of subprime loans. We see the effort as a marathon, not a sprint, and we are refining and adding to it as we go.

As I noted a moment ago, as delinquencies and home prices shrink the pool of potential borrowers in existing Federal and state programs, an important consideration for lenders and policymakers involves the situations of borrowers whose loan now exceeds the value of their house. Of course, any remedies need to take into account the future risk to taxpayers, and the incentives created for borrowers and lenders. But we need to weigh that against the problems for communities that can occur with widespread foreclosures – including the negative effects on neighboring homeowners, the burden on tenants, and the costs borne by municipalities and communities in addressing blight and crime in areas of clustered foreclosures.

As Federal Reserve Board Chairman Ben Bernanke said on Tuesday,¹⁹ this situation calls for a vigorous response – but care must be taken in designing solutions, so they represent safety and soundness for lenders and are characterized by fairness and minimal “moral hazard.” I would note that foreclosure costs are often substantial to *lenders* (and by extension, I would add investors) – of course it goes without saying that

they are painfully costly on many levels for borrowers. So there is considerable scope for negotiating a mutually beneficial outcome.

Somewhat along those lines, some parties are proposing variants of a “shared appreciation” loan approach.²⁰ Lenders could write down the loan amount to the current home value, cap losses, avoid the costs associated with foreclosure, and receive a share of any future home appreciation when the buyer sells. The borrower could avoid foreclosure and reduce monthly payments.²¹ The FHA could provide insurance, but defray the increased risk with a share of the gains when the homeowner sells. Approaches like this, and other worthy ideas that are being proposed, should be debated by policymakers and interested parties – but without delay.

Concluding Thoughts

As I noted at the outset, the current financial turmoil is ongoing but it is not too soon to consider lessons learned.

The uncertainty surrounding ratings has caused a variety of financial markets to become illiquid and caused very significant write-offs at major financial institutions. Considering ways to differentiate ratings on assets like corporate securities from ratings on assets whose ratings histories and price-drivers may be quite different, and less well understood, is probably a first important step.

The difficulty in pricing assets should make investors consider whether such complexity is necessary, and whether some of these instruments should be more standardized or possibly moved from dealer markets to exchange-traded instruments.

In the housing area, thought will likely be needed regarding programs for those with negative as well as positive equity in their houses. As long as housing prices continue to fall, the decline increases the risks to borrowers, lenders, markets and the economy.

I thank you for exploring with me today these problems that have roiled Wall Street, and are beginning to significantly affect Main Street. We are facing some unique and complex challenges in all of these areas. Let me leave you with the thought, however, that there may be a significant cost to *delaying* needed actions that could restore confidence in the ratings process, the pricing of financial assets, and the impact of declining house prices.

¹ 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 GDP is essentially the value of goods and services put in place during a time period, and residential investment is the housing component of GDP. "The main indicator of the quantity of new housing supplied to the economy is the residential fixed investment series from the national income and product accounts. Residential investment is made up of new construction put in place, expenditures on maintenance and home improvement, equipment purchased for use in residential structures (e.g., washers and dryers purchased by landlords and rented out to tenants), and brokerage commissions." (Source: "Residential Investment over the Real Estate Cycle" by John Krainer, in the Federal Reserve Bank of San Francisco's *Economic Letter* #2006-15; June 30, 2006). "Brokers' commissions...are part of the cost of acquiring a house and, therefore, a capital expenditure." (Source: "National and Regional Housing Patterns" by Lynn Elaine Browne in the *New England Economic Review*, July/August 2000, published by the Federal Reserve Bank of Boston).

³ For example see Greenlaw, Hatzius, Kashyap, and Shin (2008), "Leveraged Losses: Lessons from the Mortgage Meltdown." presented at the 2008 U.S. Monetary Policy Forum on February 29, 2008. Using three different methods, they conclude that mortgage related losses will be \$400 billion.

⁴ 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.

According to interagency guidance issued, in 2001, "The term 'subprime' refers to the credit characteristics of individual borrowers. Subprime borrowers typically have weakened credit histories that

include payment delinquencies and possibly more severe problems such as charge-offs, judgments, and bankruptcies. They may also display reduced repayment capacity as measured by credit scores, debt-to-income ratios, or other criteria that may encompass borrowers with incomplete credit histories. Subprime loans are loans to borrowers displaying one or more of these characteristics at the time of origination or purchase. Such loans have a higher risk of default than loans to prime borrowers. Generally, subprime borrowers will display a range of credit risk characteristics that may include one or more of the following: Two or more 30-day delinquencies in the last 12 months, or one or more 60-day delinquencies in the last 24 months; Judgment, foreclosure, repossession, or charge-off in the prior 24 months; Bankruptcy in the last 5 years; Relatively high default probability as evidenced by, for example, a credit bureau risk score (FICO) of 660 or below (depending on the product/collateral), or other bureau or proprietary scores with an equivalent default probability likelihood; and/or Debt service-to-income ratio of 50 percent or greater, or otherwise limited ability to cover family living expenses after deducting total monthly debt-service requirements from monthly income. This list is illustrative rather than exhaustive and is not meant to define specific parameters for all subprime borrowers. Additionally, this definition may not match all market or institution specific subprime definitions, but should be viewed as a starting point from which the Agencies will expand examination efforts.”

⁵ Based on historical experience, 70 percent or more of the securities were viewed as relatively safe and could carry high investment-grade ratings. Often these higher quality securities were also repackaged into new securities, such as collateralized debt obligations, making the risk tiering even less clear to the investor. If the ratings were accurate, highly rated securities containing subprime debt would have only a remote chance of default – similar to investment-grade securities containing prime mortgages, home equity loans, or student loans.

⁶ Financing arrangements involving so-called auction-rate securities have experienced difficulties – investor interest in such securities waned as investors became concerned that insurers of debt might not have sufficient financial capacity to meet all their obligations. In a similar vein the private student-loan market has found securitizations used to finance pools of student loans are more difficult, as investors avoid securitized financial instruments in general. And the commercial real estate market has been disrupted as investors have become reluctant to buy commercial-mortgage-backed securities.

⁷ It should be noted that there was criticism of corporate ratings for a number of specific companies, such as Enron, earlier this decade.

⁸ Most firms that issue debt also have publicly traded equity. Equity analysts provide a variety of perspectives on a firm's prospects. In addition, investors often have access to default probabilities, known as KMV, or can observe credit default spreads to get another perspective on the accuracy of ratings. Also, firm's equity and options can provide important evidence of how other investors perceive the company. Finally, there is a long history of the SEC enforcing disclosure rules to insure that investors have sufficient information about important corporate developments. With this plethora of corroborating data, investors have a wide variety of indicators to help evaluate a firm's debt rating.

⁹ In particular, those investors who are not well positioned to make independent credit evaluations should seek rated assets where the information costs for validating ratings are low.

¹⁰ The recent declines in the highest-graded of some mortgage securities implies very significant losses, as investors would only take losses on these high-grade securities after all lower-graded securities had been wiped out.

¹¹ “Auction rate securities were first offered for sale in U.S. financial markets in the early 1980s. As of the end of 2005, there were approximately \$263 billion of auction rate securities outstanding. Many different types of issuers have issued auction rate securities – for example, closed-end funds, corporations, municipal authorities and student loan organizations. Auction rate securities have generally been issued as either bonds or preferred stock and are designed to serve as money market-type instruments. They are purchased

and sold, at established intervals, through an auction-type mechanism, but have long-term maturities, or no maturity at all. In the auctions, auction rate securities are purchased and sold at par. Auction rate securities have also been called ‘Auction Market Preferred Stock,’ ‘Variable Rate Preferred Securities,’ ‘Money Market Preferred Securities’ and ‘Periodic Auction Rate Securities.’ The interest or dividend rate of an auction rate security is reset at these established intervals based on an auction in which investors who already hold the security (called ‘holders’) and investors who seek to acquire the security (called ‘prospective holders’) indicate their interest in continuing to hold, or in purchasing or selling, the security at rates that they specify to broker-dealers, such as Merrill Lynch, who have been appointed to participate in the auction. The dates on which the auctions take place (the ‘auction dates’), and the interval between the auction dates (the ‘auction period’), vary depending on the security. The auctions commonly are every seven days, twenty-eight days, thirty-five days or forty-nine days, but there are also some securities for which the auctions occur daily and others for which the auctions occur at longer intervals – for example, every six months or once over a multi-year period.” Source: Merrill Lynch, “Description of Merrill Lynch’s Auction Rate Securities Practices and Procedures” (<http://www.ml.com/media/70501.pdf>).

¹² As noted in updates on credit and municipal market developments by Michael Holscher, David Jones, Eric Stein, John McGowan, and Jason Miu of the Federal Reserve Bank of New York.

¹³ “A structured investment vehicle or SIV is a limited-purpose operating company that undertakes arbitrage activities by purchasing mostly highly rated medium- and long-term, fixed-income assets and funding itself with cheaper, mostly short-term, highly rated CP and MTNs. While there are a number of costs associated with running a structured investment vehicle, these are balanced by economic incentives: the creation of net spread to pay subordinated noteholder returns and the creation of management fee income. Vehicles sponsored by financial institutions also have the incentive to create off-balance-sheet funds management structures with products that can be fed to existing and new clients by way of investment in the capital notes of the vehicle.” Source: Standard & Poor’s (http://www2.standardandpoors.com/portal/site/sp/en/us/page.article_print/2,1,1,0,1031342466642.html).

¹⁴ And enabled investors to evaluate whether pricing of their mortgage security was appropriate given the pricing of similar products.

¹⁵ While making financial products more standard involves some trade-offs – less opportunity to provide investors a more customized product – such customized products involve some down-sides when accurate pricing requires the particular security to trade hands in order to have confidence in its market price.

¹⁶ In addition, an exchange can very significantly reduce counterparty risk by enforcing margin requirements and other mechanism, to insure counterparties meets their contractual obligations. The credit-default swap market has grown to the point where pricing and counterparty risk could be mitigated if more transactions were exchange-traded.

¹⁷ “The Federal Housing Administration (FHA), an agency of the federal government, insures private loans that are issued for new and existing housing... Created by congress in 1934, the FHA became part of the Department of Housing and Urban Development's Office of Housing (HUD) in 1965. Today the mission of the FHA includes helping borrowers get amounts they qualify for, and assisting lenders by reducing their risk in issuing loans.” (Source: www.FHA.com)

¹⁸ This is an approximation of FHA practice. The FHA would qualify the borrower at the FHA rate, not the original subprime rate, so we have used 45 percent rather than 41 percent of the back-end debt-to-income. Actual credit standards may differ from the assumption used of never more than 60 days past due. Also, the FHA lending limits are in the process of changing. However, given the changes in both the economy and housing prices, these factors may be more important in determining who qualifies in the future.

¹⁹ “Reducing Preventable Mortgage Foreclosures” – March 4 speech at the Independent Community Bankers of America Annual Convention, available at: <http://www.federalreserve.gov/newsevents/speech/bernanke20080304a.htm>.

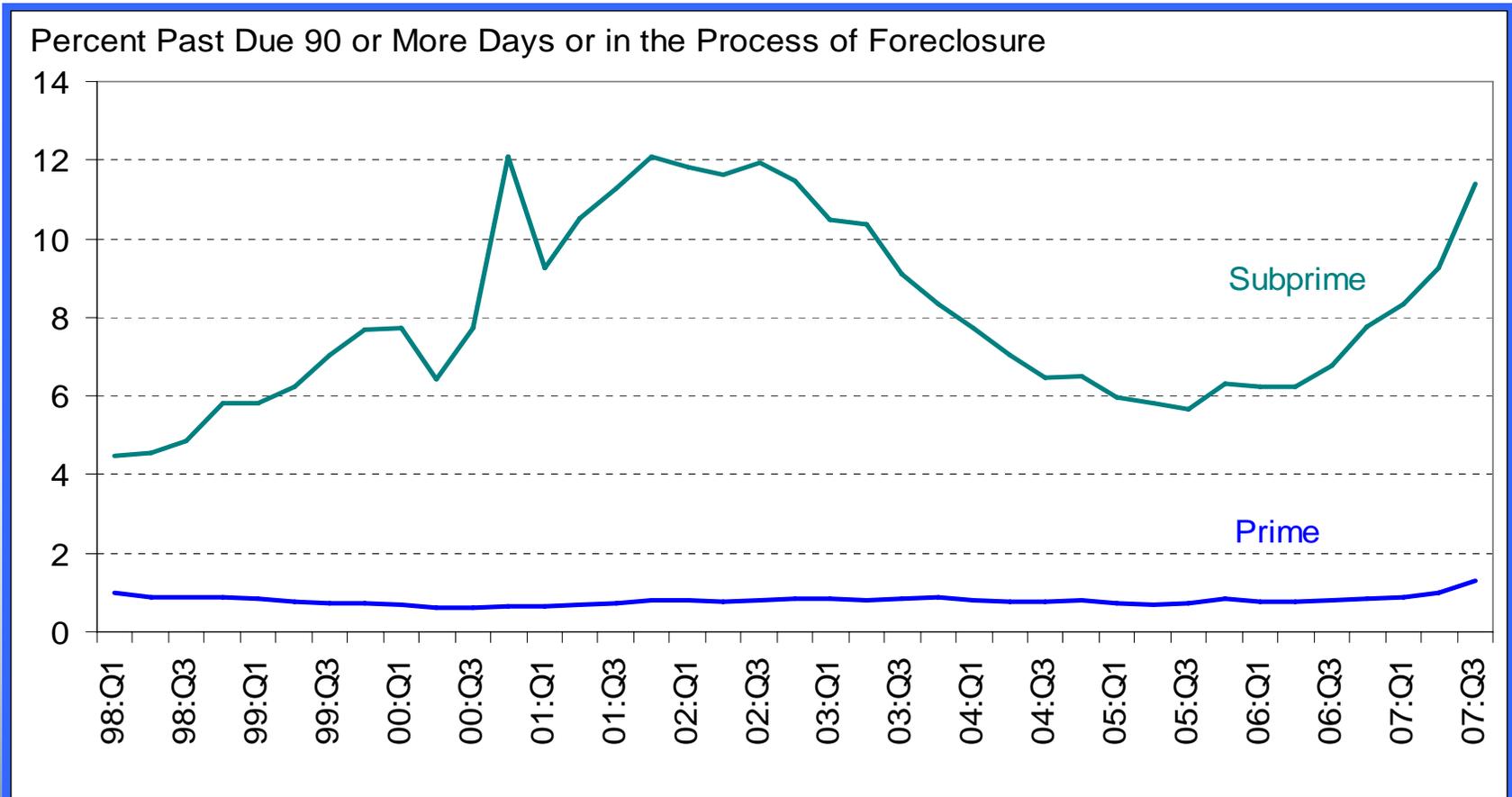
²⁰ The Office of Thrift Supervision is one such party.

²¹ The borrower would have a reduced loan balance and receive a prime rate, but would be obligated, upon selling, to share some of the future appreciation with the current lender and the FHA. Consider for example a borrower with a loan of \$110,000 and a value of the house of \$100,000. The lender would write off \$10,000 but would receive \$100,000 when the loan was refinanced with FHA financing. The lender would receive an option that gave the lender a share of any appreciated value in the house, for example 20%. If the home was sold for \$150,000, the lender would receive the \$10,000 at time of sale. The FHA would receive a share of the appreciated value in the house, for example 10%. If the home sold for \$150,000 the FHA would receive \$5000 at the time of sale. The borrower would avoid foreclosure, and still receive 70% of the appreciation, or \$35,000. The shared appreciation values could be designed as transferable options that are recorded with the registry of deeds.

Figure 1

Mortgage Delinquency Rates by Loan Type

1998:Q1 - 2007:Q3



Source: Mortgage Bankers Association National Delinquency Survey / Haver Analytics

Figure 2

Simplified Representation of a Mortgage-Backed Security's Capital Structure

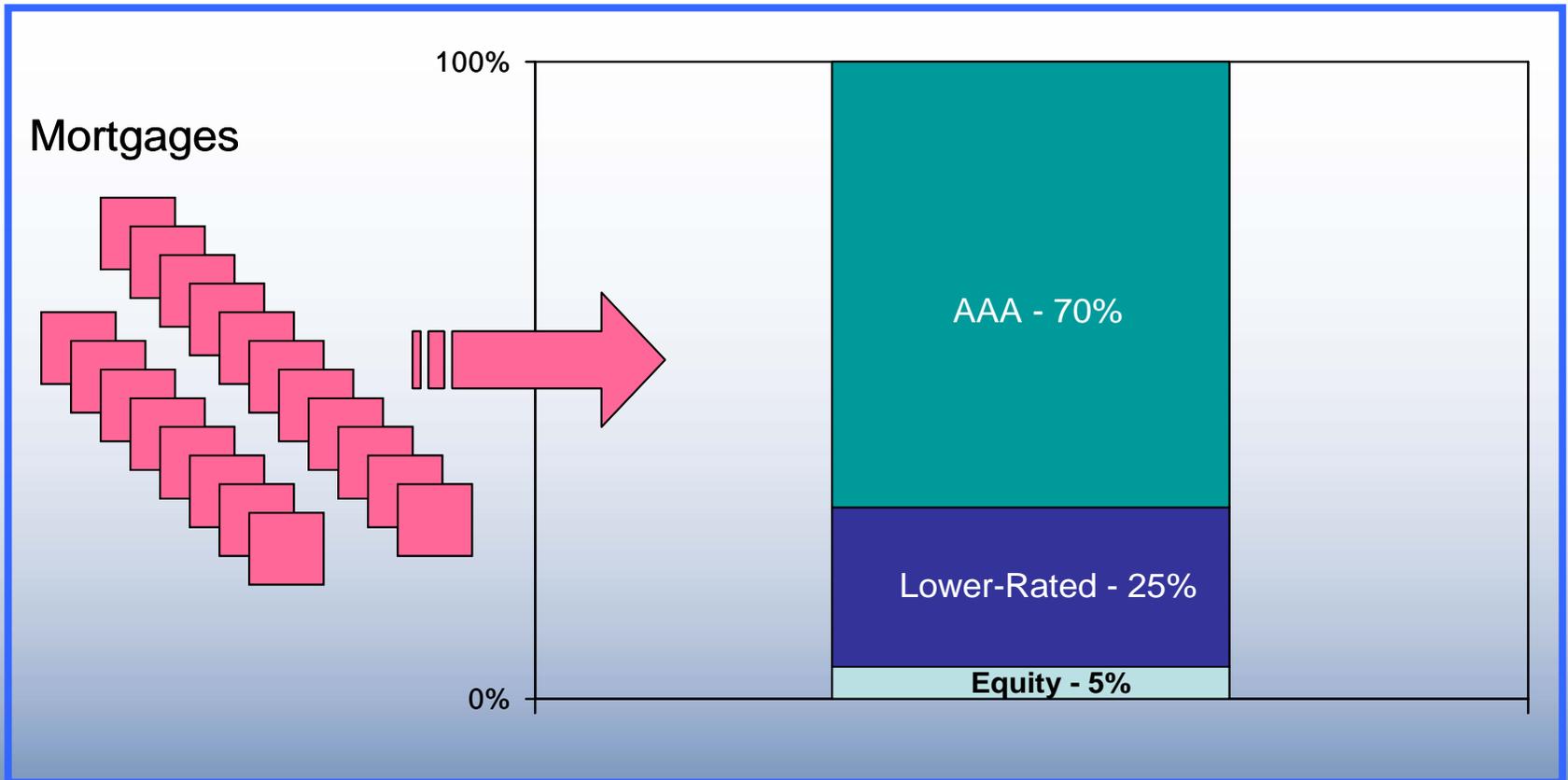
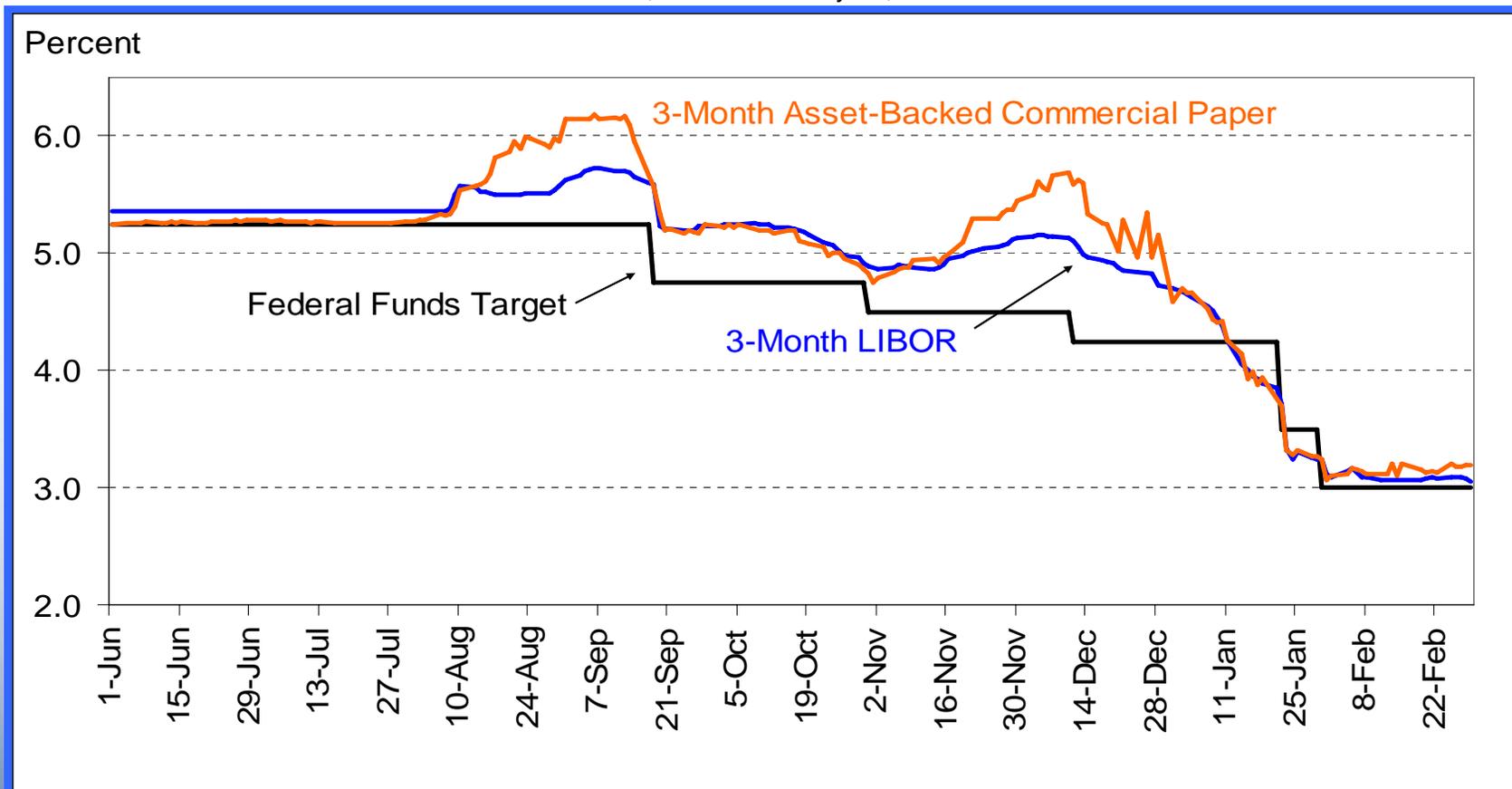


Figure 3

Three-Month Asset-Backed Commercial Paper Yield, LIBOR, and the Federal Funds Target Rate

June 1, 2007 - February 29, 2008

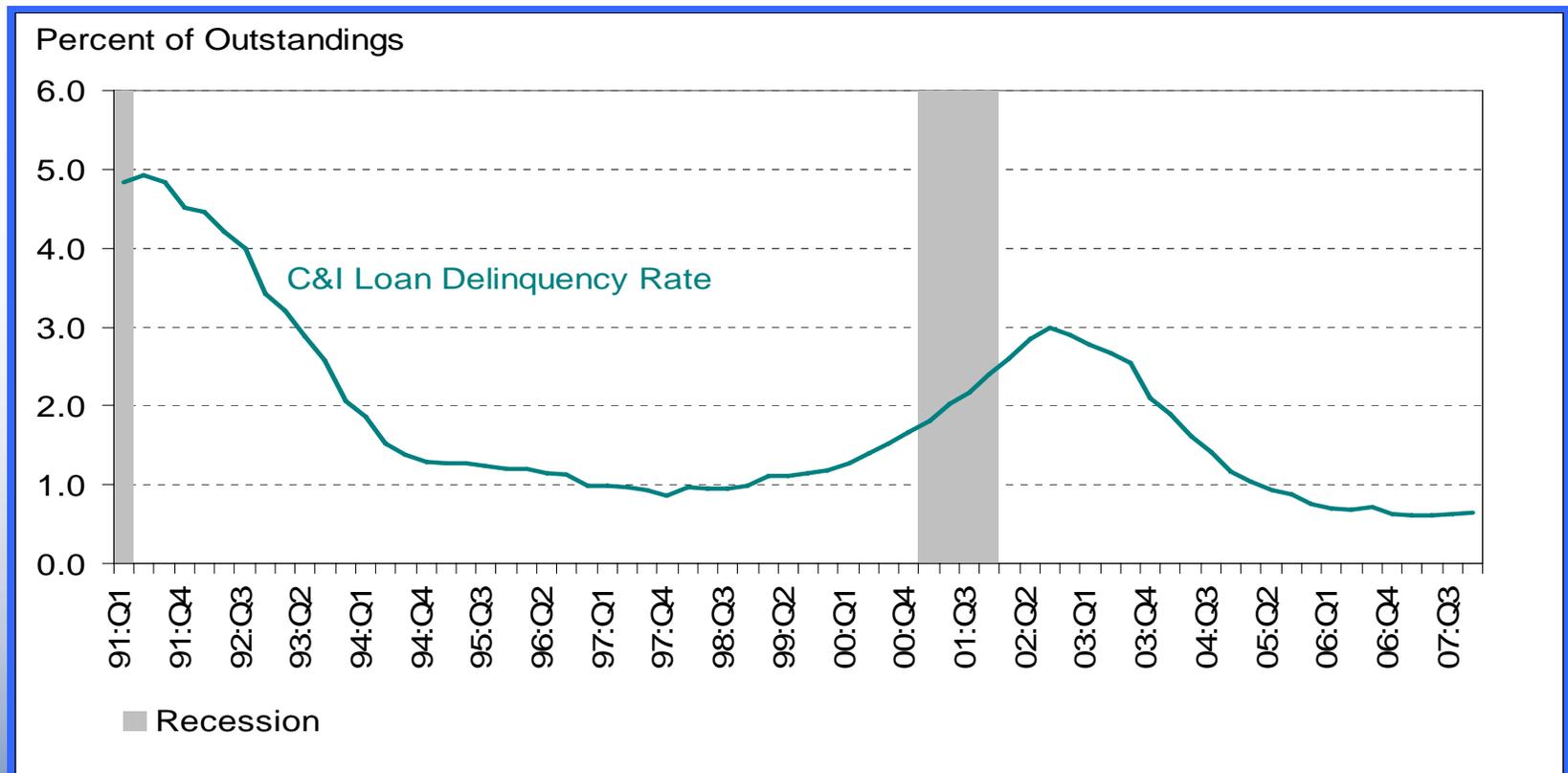


Source: Federal Reserve Board / Haver Analytics.

Figure 4

Commercial and Industrial Loan Delinquency Rate at U.S. Commercial and Savings Banks

1991:Q1 - 2007:Q4

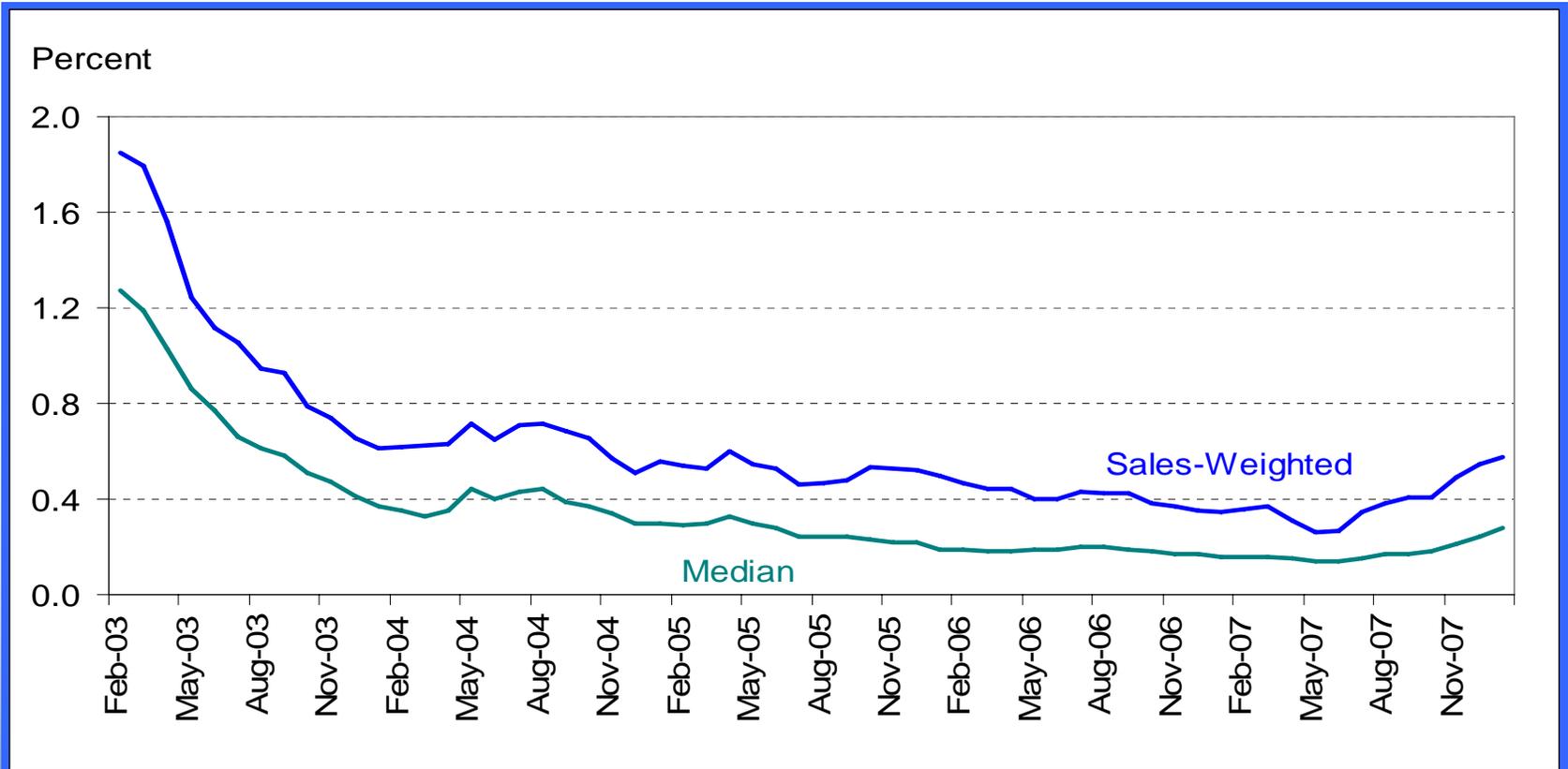


Source: Commercial and Savings Bank Call Reports.

Figure 5

KMV Sales-Weighted and Median Expected Default Frequency

February 2003 - January 2008

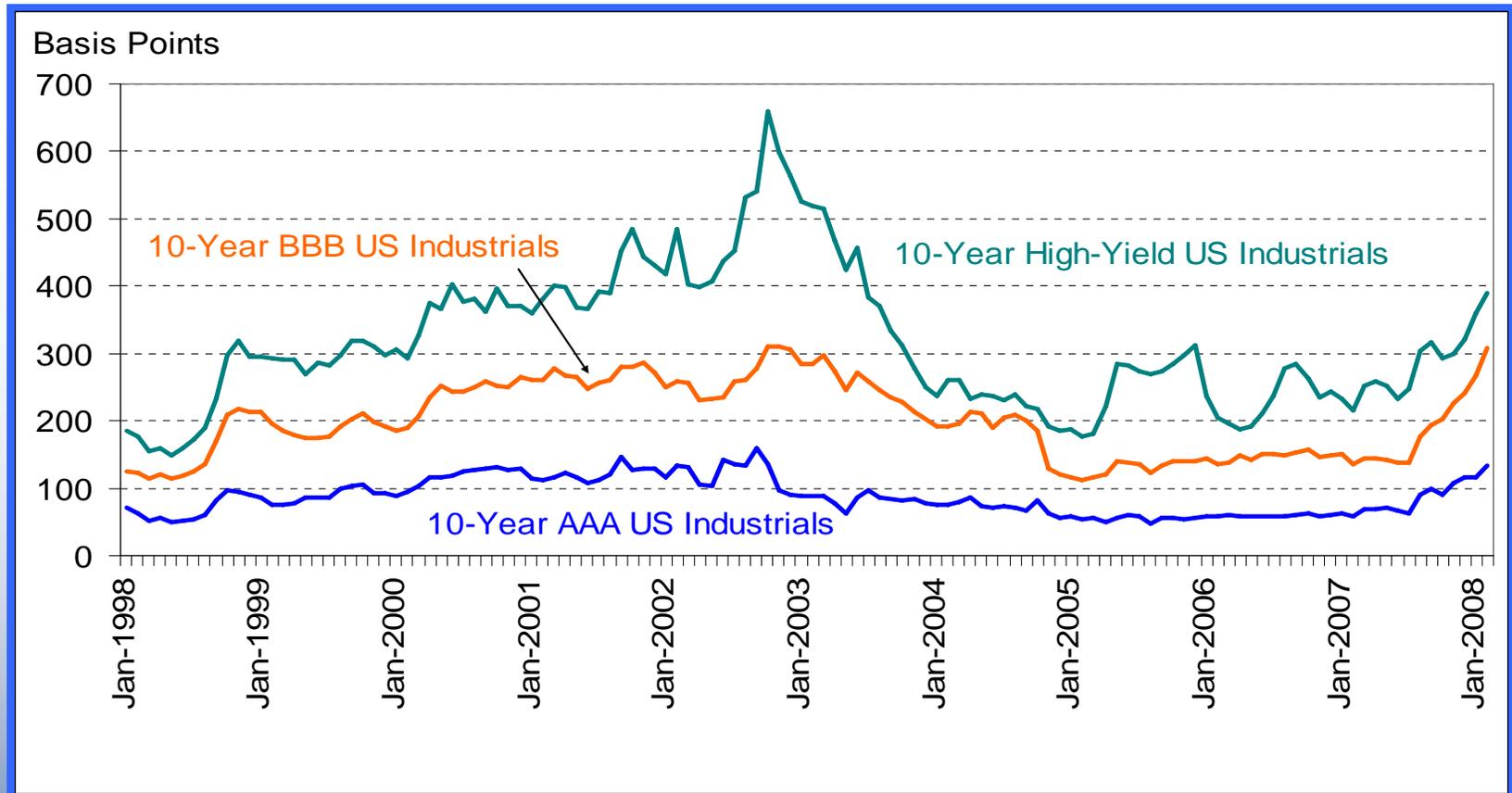


Source: Moody's KMV and author's calculations.

Figure 6

Yield Spreads: Corporate Bonds vs. 10-Year Treasury

January 1998 - February 2008

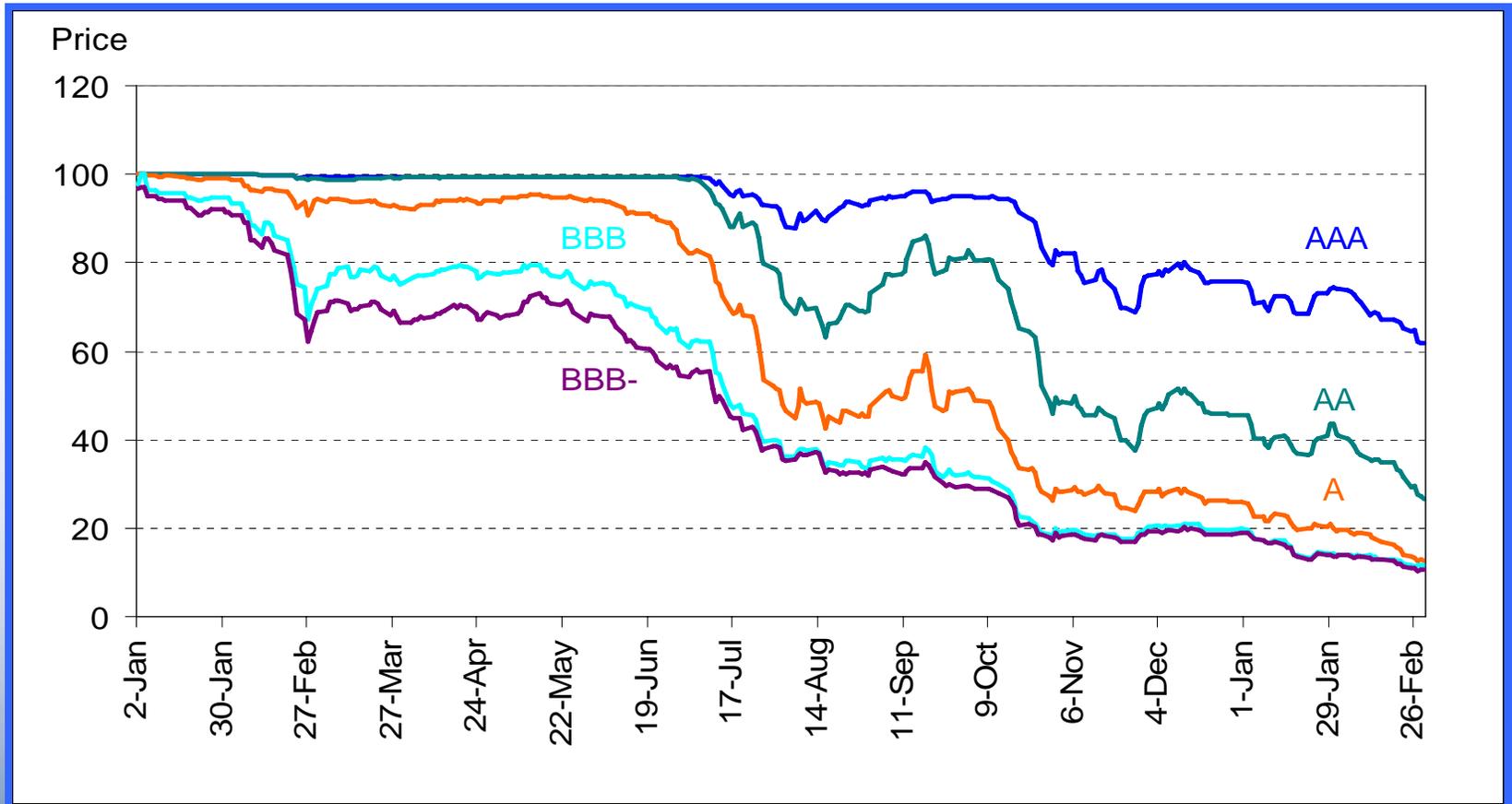


Source: S&P Global Fixed Income Research / Haver Analytics.

Figure 7

ABX-HE 07-01 Tranches

January 2, 2007 - February 29, 2008.



Source: Markit.

Figure 8

www.MortgageReliefFund.com



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It's your home.
We're here to
help you keep it
that way.



Every day we hear more and more about families facing rising mortgage costs and the very real possibility of losing their homes. To help prevent that from happening, five banks in New England have partnered together - with the encouragement of the Federal Reserve Bank of Boston - to provide assistance to homeowners *before the threat of foreclosure becomes a reality.*

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