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FEDERAL RESERVE BANK OF BOSTON™

"Implications of a Credit Crunch"

Eric S. Rosengren
President & Chief Executive Officer
Federal Reserve Bank of Boston

The Business and Industry Association of New Hampshire
and the Greater Manchester Chamber of Commerce

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I am pleased to be with you today in New Hampshire, and would like to share some perspectives on the implications of a credit crunch.[1] Unfortunately, a credit crunch is not an entirely new topic for those of you who have been doing business in New Hampshire for some time, since you experienced the early 1990s – when many of the larger banks in the state failed, and credit availability was an acute problem.

Today, banking and real estate problems are less severe in New England than they are in many other parts of the country. However, on a national scale the "headwinds" pushing against the economy look to be a good bit stronger than those experienced in the early 1990s.

Over the course of this summer it became clear that the economic headwinds have not subsided as hoped. With some help from tax rebates and previous interest-rate cuts, the second quarter was better than many had feared; however, most private forecasters are expecting significantly slowed growth in the second half of this year – as residential investment continues to be a drag on the economy, as consumers tighten up on their spending, as the impact of the Federal tax rebate subsides, and as weakness among some of our major trading partners makes the outlook for many exports more restrained.

With the economy expected to expand at a rate below its potential in the second half of this year, further increases in the unemployment rate are possible. It now appears that the national unemployment rate may rise above 6 percent, an increase of more than one and a quarter percentage points – or about 2 million workers – from last August, when the financial problems emerged.

Contributing to this weakness, in my view, is a significant change in the nature of the financial problems facing the economy. In particular, the financial problems that initially created a *liquidity* crunch[2] have now evolved into a more traditional *credit* crunch.

Before discussing a credit crunch, allow me to describe what I mean by a liquidity crunch. Simply put, the reluctance of banks to lend to each other became quite elevated, beginning in July 2007. A combination of balance sheet constraints, poor transparency regarding potential losses, and concerns about heightened counterparty risk contributed to less liquid financial markets. Uncertainty over asset valuations increased, and banks became reluctant to take on counterparty risk with certain financial institutions – particularly with those that have significant exposure to complex financial instruments.

Turning to the notion of a credit crunch, we see that mounting losses at financial institutions, and an increasing reluctance among investors to invest new capital while the economic outlook is unclear, are forcing financial institutions to "shrink their balance sheets."

Allow me to explain that notion for the non-bankers here today. Recall that a loan is counted as an asset on a bank's balance sheet. Banks hold capital in part as a reserve against the possibility that a loan will default. Thus banks attempt to maintain a reasonable ratio of capital to assets. If a bank experiences a reduction in the value of its capital or an increase in its assets (for example as credit lines that were extended in better times are tapped),[3] the bank must take steps to shrink the asset side of its balance sheet in order to restore its desired capital-to-asset ratio.

In other words, the bank becomes more restrictive in its lending. This shrinkage in lending entails tighter underwriting standards, wider interest rate margins, and reduced credit availability.

An alternative is to raise more capital, but this can be quite difficult in times like these, when investors are wary of putting more money into some seemingly fragile financial institutions. Witness the reliance, particularly by some large, well-known institutions, on foreign sources of capital like the sovereign wealth funds in recent months.

This seemingly technical issue of banks' balance sheets is no small matter for the broader economy. Because a bank extends loans that are many times the value of its capital base – the hallmark of a "leveraged" institution – the result is that when a bank's capital loses value, it must reduce its loans *by much more* in order to maintain its capital-

asset ratio. In numeric terms, for a bank seeking to maintain a 10 percent capital-to-asset ratio, the bank would need to reduce assets – like loans – by *$10* for every $1 lost in capital.[4]

Today I am going to discuss the implications of a credit crunch – specifically, the effects of a credit crunch on the degree of stimulus that is provided by monetary policy. In particular, I will discuss how a low Federal Funds rate provides much less stimulus during a credit crunch than it otherwise would – because those low rates for inter-bank loans do not necessarily translate into lower costs to the vast majority of borrowers who rely on funding sources outside the Federal Funds market.

To preview the punch line, let me say that looking only at the Federal Funds rate during periods of significant economic headwinds will, in my view, provide a misleading gauge of the degree of monetary stimulus that the Federal Reserve has put in place. At such times, a low Federal Funds rate does not signal a particularly accommodative monetary policy, but rather *offsets some of the contraction that would otherwise occur* as financial institutions tighten credit standards and offer borrowing rates with a spread over the Federal Funds rate that is larger than usual (in other words, larger than would be the case outside of credit crunch conditions).

That said, make no mistake: in my view, credit conditions would likely be much worse if the Federal Reserve had not lowered the Federal Funds rate and taken several innovative steps to enhance liquidity in the marketplace – steps like opening our new Term Auction Facility and other facilities that complement our traditional "Discount Window" for banks.

I. Overview of recent financial issues

For context I would like to provide an overview, as I see it, of the recent financial turmoil. Over a year ago, problems stemming from large losses in securities backed by subprime[5] loans led to a liquidity crunch. While the initial trigger for the financial turbulence was related to subprime mortgages, the uncertainty surrounding ratings of complicated financial instruments 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. Inter-bank lending markets, mortgage markets tied to securitization, and short-term assets financed through the commercial paper market experienced sharply wider spreads and significant declines in volumes.

At the time, it was hoped that these problems would be short-lived. However, after one year, while the spreads have fluctuated they remain quite elevated by historical standards.

The initial liquidity problems soon created credit problems at large financial institutions with significant exposure to these markets. While it is true that significant new capital has been raised, for many institutions the new capital only partially offset losses and provided little cushion for potential additional losses.

In addition, the continued decline in housing prices has caused problems to extend well beyond the larger banks active in complicated financial arrangements. Falling housing prices, coupled with a rising unemployment rate, are contributing to increases in non-performing loans – on prime as well as subprime mortgages, on construction loans, and on home equity loans (see **Figure 1**).

As problems have extended to a broader set of financial institutions, concerns that the financial condition of leveraged institutions will create a more traditional credit crunch have increased. The last time a significant credit crunch occurred in the United States was in the early 1990s.

At that time, falling commercial real estate prices in New England, the Mid-Atlantic, and California caused large losses of capital for banks in those regions. Many banks had little success in attracting new capital, and instead shrank their assets to improve their capital ratios.[6] Because of the implication of leverage that I mentioned earlier, banks' capital losses can have a magnified impact on the overall economy.

It had been hoped by many observers that consolidation in the banking industry and growth in securitization would make a 1990s-style credit crunch less likely. Unfortunately, that is not how things have worked out.

As we all know, there has been significant consolidation in the banking industry (see **Figure 2**). It was hoped that banks with a more national footprint would be less susceptible to regional shocks and thus more able to lend during regional downturns. Unfortunately, many of the largest commercial and investment banks had a significant concentration of their assets in complex securities that have declined in value, had significant exposures to subprime mortgages or so-called "Alt A" mortgages that have declined in value, and also had exposure to construction and residential loans that have suffered from national rather than just regional declines in value.

In terms of securitization, the loss of confidence in complex financial instruments and their ratings has dried up the demand for all but the simplest and least-risky securitizations. So rather than serving as a shock absorber for banking problems, it seems

that securitization has actually exacerbated the problem. Indeed, a wide variety of loans that were once widely securitized are now not available (e.g., subprime mortgages) or are only available from financial institutions at much higher costs (e.g., jumbo loans).

II. Credit availability for businesses

Now with that context, I'd like to comment on the current state of credit availability for businesses.

The 1990s credit crunch was primarily a problem for small and medium-sized businesses that were dependent on their bank for credit – businesses that found credit less available as their bank reduced assets to improve its capital ratio. As I suggested earlier, banks can choose to shrink assets in several ways – by raising rates, tightening credit standards, or refusing to roll over loans and lines of credit that expire.

A useful indicator of bank lending practices has been the Federal Reserve's senior loan officer survey, which asks senior loan officers from large domestic banks as well as foreign banks with branches in the United States a series of questions. Numerous academic studies have found that the survey can be useful in estimating credit restraint and its impact on bank-sensitive components of GDP.[7]

Figure 3 provides the responses of loan officers asked if their bank had tightened lending standards for commercial and industrial loans to firms over the past three months. As the figure shows, the results of the July 2008 survey indicated that nearly 60 percent of banks had tightened their lending standards for large firms and 65 percent had tightened their lending standards for small firms. This was the largest percentage of banks tightening commercial and industrial loan standards for small firms in the survey's

history, which includes both the 2001 and 1990 recessions (and the number for large firms is right in the vicinity of the observations from those eras).

Figure 4 shows the survey answers to the question of whether lenders had increased spreads – in other words the amount by which their loan rates exceed the bank's cost of funds. In July, about 80 percent of domestic banks said that they had increased their loan rates for large firms relative to their cost of funds, and roughly 70 percent of banks said they had increased their loan rates for small firms relative to their cost of funds. These responses represent the highest net percentage of banks reporting that they had increased interest-rate spreads on commercial and industrial loans in the survey's history.

Figure 5 relates to the survey's question on whether domestic respondents had tightened lending standards on commercial real estate loans. Again, the results of the July survey are at high points for the series, exceeding the peak that occurred during the early 1990s.

In sum, these results indicate that the financial problems at banks are beginning to be reflected in reduced lending to businesses. The tightening already appears to be more widespread than it was during the early 1990s (the "economic headwinds" period), and portends more difficulty in financing business fixed investment and commercial real estate projects in the second half of this year.

At least for large firms, an alternative to bank financing is to go directly to the bond market to raise funds. **Figure 6** shows the Moody's "Aaa" grade bond yields and the effective Federal Funds rate over the past 20 years. High-grade bond yields tend to fall during periods where the Federal Reserve is easing monetary policy and the economy

is experiencing a significant slowdown. However, to date – despite a significant reduction in the Federal Funds rate target from 5.25 to 2 percent – the corporate bond yield has remained little changed from its level just before the financial problems first emerged in August 2007.

Thus, while the Federal Reserve has lowered the Federal Funds rate, interest rates paid by businesses have not reflected this easing. Banks have increased their spreads on business lending and investors have continued to demand relatively high yields on bonds issued by highly credit-worthy borrowers.

III. Consumer credit conditions

Similarly, consumer credit practices have also undergone significant changes of late, as banks have underwritten consumer mortgages and credit card loans, but have increasingly sold many of those loans in the secondary market. With an active secondary market provided by the securitization of these loans, it was again widely anticipated that the availability of these types of credit would be relatively protected from credit supply shocks.

That, however, has not been the case since last August. Innovations that were supposed to insulate consumers from credit supply problems have essentially done the opposite, making a credit crunch a concern for consumers as well as businesses.

Initially, borrowers of subprime mortgages felt the largest impact. Because investors lost confidence in the securitization structure for subprime mortgages, investors virtually abandoned the market, impeding the ability of borrowers to get subprime mortgages.

But so-called jumbo mortgages were also affected. While these mortgages were often to borrowers with good credit history, banks were no longer able to securitize these mortgages but were forced to hold the loans in their own portfolio. This resulted in the spread on jumbos rising, reflecting banks' limited desire to expand their balance sheet on these types of mortgages.

Initially, the one area of the mortgage market that was only modestly impacted was that for prime mortgages that could be securitized by Freddie Mac and Fannie Mae. However, this spring highlighted the financial problems at the two Government Sponsored Enterprises (the GSEs) – problems which have both increased their borrowing costs and reduced their willingness to expand their balance sheets.

Figure 7 provides the 30-year conventional mortgage rate and the effective Federal Funds rate. During the previous two periods of significant monetary easing, around the times of the 1990 and 2001 recessions, the 30-year rate trended down when the Federal Reserve was reducing the Federal Funds rate. This is in contrast to the current period when, despite a significant decline in the Federal Funds rate, the 30-year conventional mortgage rate has remained little changed.

Figure 8 shows the rates on one-year adjustable-rate mortgages (ARMs) and jumbo mortgages. Because one-year ARMs are frequently reset, their rates tend to be much more responsive to Federal Reserve rate easing than those of longer-term loans. While the yield on one-year ARMs did fall significantly in the previous two periods where the Federal Funds rate declined substantially, this time the yield on one-year ARMs has been fairly unresponsive to the lower Federal Funds rate. While there is only

a limited time-series for rates on jumbo mortgages, those rates have *increased* significantly despite the lower Federal Funds rate.

In sum, the problems relating to the securitization market and the GSEs have reduced the responsiveness of mortgage and other consumer lending rates to reductions in the Federal Funds rate. It is also a sign of the times that for many borrowers, access to credit may be limited because of an unwillingness to lend to borrowers with troubled credit histories, or because falling housing prices have reduced their ability to utilize home equity lines of credit. Where credit is available, the yields have remained high despite the reductions in the Federal Funds rate.

That is not to say that monetary policy has been ineffective – quite the opposite, in my view. The rate easing and liquidity measures undertaken by the Federal Reserve were appropriate and effective, in that credit problems would likely be a great deal more severe, and widespread, had we not taken the steps.

IV. Implications for monetary policy

Now a few additional thoughts on what this all means for U.S. monetary policy.

While the Federal Funds rate is low by historical standards, I would argue that one cannot capture the stance of monetary policy by only looking at this one rate, particularly during a period when the transmission of monetary policy has been impeded by problems with securitization, financial institutions, and GSEs.

During a credit crunch, various constraints on the supply of credit will make market rates less responsive to a lower Federal Funds rate. While the Federal Reserve essentially sets the Federal Funds rate (the rate at which banks will lend to each other), it

does so with the intention of also impacting other rates that more directly affect borrowers. But in the current period, many business borrowers and consumers are finding their access to credit has diminished, and their cost of credit has risen, despite the reductions in the Federal Funds rate.

Indeed, as suggested earlier, the reductions in the Federal Funds rate have done little but offset some of the tightening occurring in the marketplace in response to the credit crunch conditions. Thus one can argue that much of the easing in monetary policy to date has merely *offset* the tightening in credit conditions created by the financial turmoil that began last summer.

Ideally, as these financial headwinds subside, the current very large spreads relative to the Federal Funds rate will narrow, and we will see the rates available to businesses and consumers decline, helping to stimulate demand. It is precisely for this reason that the Federal Reserve has undertaken a variety of innovative liquidity measures, to enable the financial markets to begin to operate more normally.

Let me conclude by reiterating my view that credit conditions, while difficult, would likely be much worse if the Federal Reserve had not lowered the Federal Funds rate and opened the additional liquidity facilities.

In closing let me thank you again for inviting me to speak with you today about these important issues, and their implications – for all of us in the region and for the national economy.

Notes

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

[2] For more on this topic see my comments on liquidity and systemic risk, delivered at the Federal Reserve Bank of Richmond's 2008 Credit Markets Symposium ("The Changing Business of Banking") in Charlotte, North Carolina on April 18, 2008 (available at http://www.bos.frb.org/news/speeches/rosengren/2008/041808.htm).

[3] Over the past year bank assets have actually grown, particularly at the largest institutions. Much of this growth likely reflects "involuntary lending" – that is, banks expanding assets in response to liquidity commitments they extended during the previous good times. Some of the factors that have increased assets on balance sheets have included the inability to roll commercial paper, firms expanding their use of lines of credit, the inability to sell leveraged loans that were originated with the expectation that they would be quickly distributed, liquidity triggers forcing the purchase of municipal bonds, and the inability to sell assets that were in the process of being securitized. Swelling bank assets place pressure on capital-constrained banks to pull back in other areas.

[4] For a description of how leveraged institutions' losses can have a disproportionate impact see Greenlaw, Hatzius, Kashyap, and Shin. They have highlighted the importance of loss of capital on highly leveraged broker-dealers ("Leveraged Losses: Lessons from the Mortgage Market Meltdown" – U.S. Monetary Policy Forum Report No. 2; Rosenberg Institute, Brandeis International Business School and Initiative on Global Markets, University of Chicago Graduate School of Business (2008).

See also Adrian and Shin, "Financial Intermediaries, Financial Stability and Monetary Policy" (paper prepared for the Federal Reserve Bank of Kansas City Symposium at Jackson Hole, August 2008).

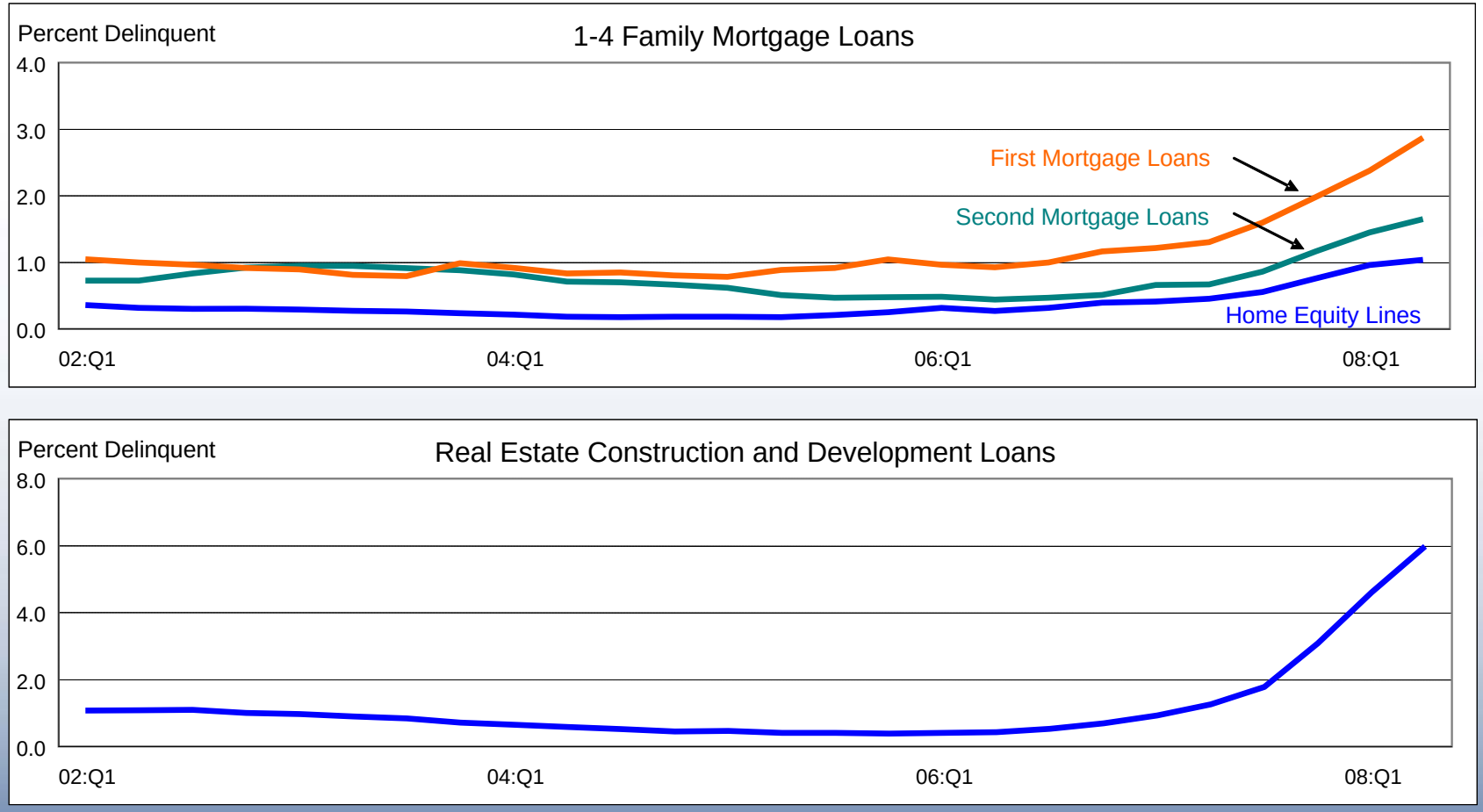
[5] In essence "subprime" loans refer to mortgages that have a higher risk of default than prime loans, often because of the borrowers' credit history. Subprime loans carry higher interest rates reflecting the higher risk. Certain lenders, typically mortgage banks, may specialize in subprime loans. Banks,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

[6] For a description of credit crunch problems in the early 1990s see Peek and Rosengren, "The Capital Crunch: Neither a Borrower nor a Lender Be," *Journal of Money, Credit and Banking*, vol. 27, no. 3 (August 1995): 625-638.

[7] See for example Cara Lown and Don Morgan, "The Credit Cycle and the Business Cycle: New Findings Using the Loan Officer Opinion Survey" in *Journal of Money, Credit, and Banking* 38 (2006), pp. 1575-1597, for how the loan officer survey may be help predict trends in GDP components that are bank dependent. Some private forecasters are currently using the survey in their forecasts of the economy.

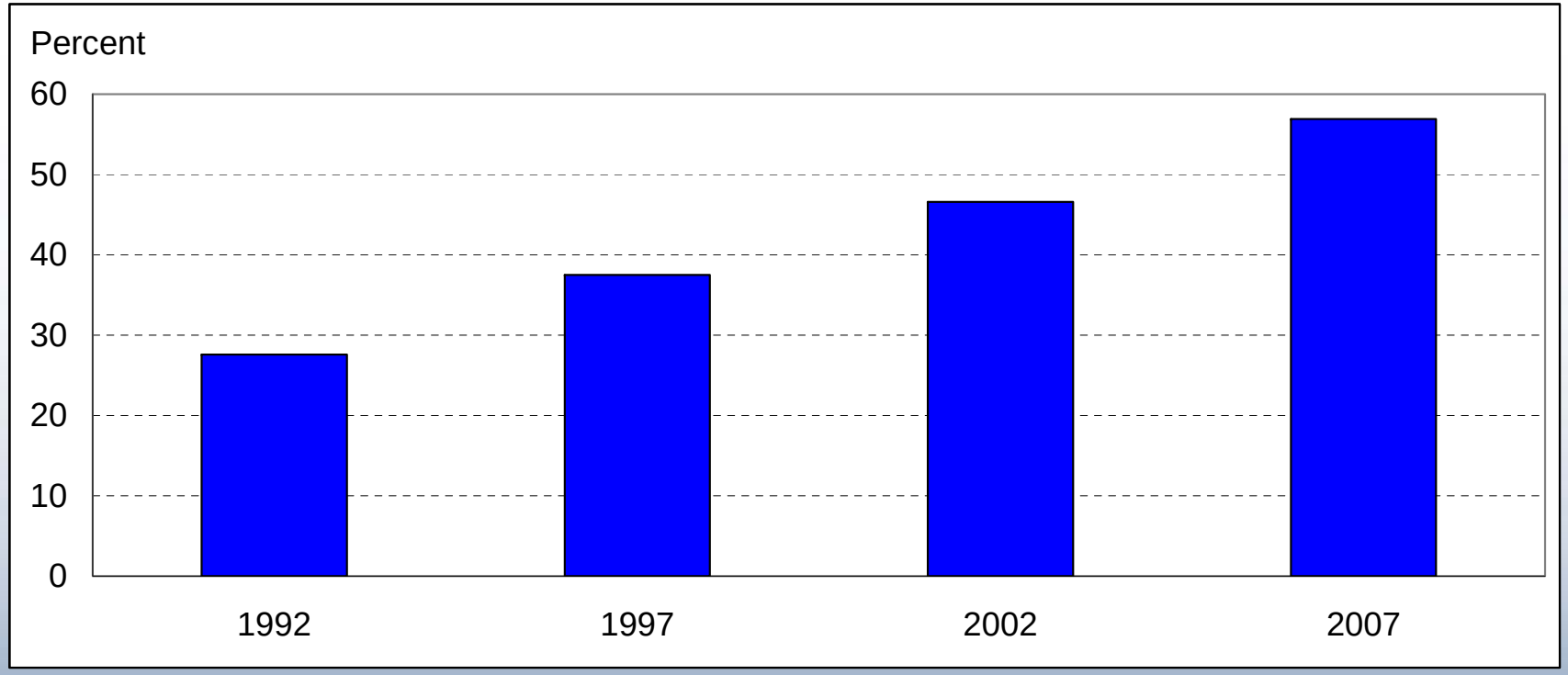
Figure 1
Delinquency Rates on Real Estate Loans at Commercial and Savings Banks

2002:Q1 – 2008:Q2



Source: Bank Call Reports

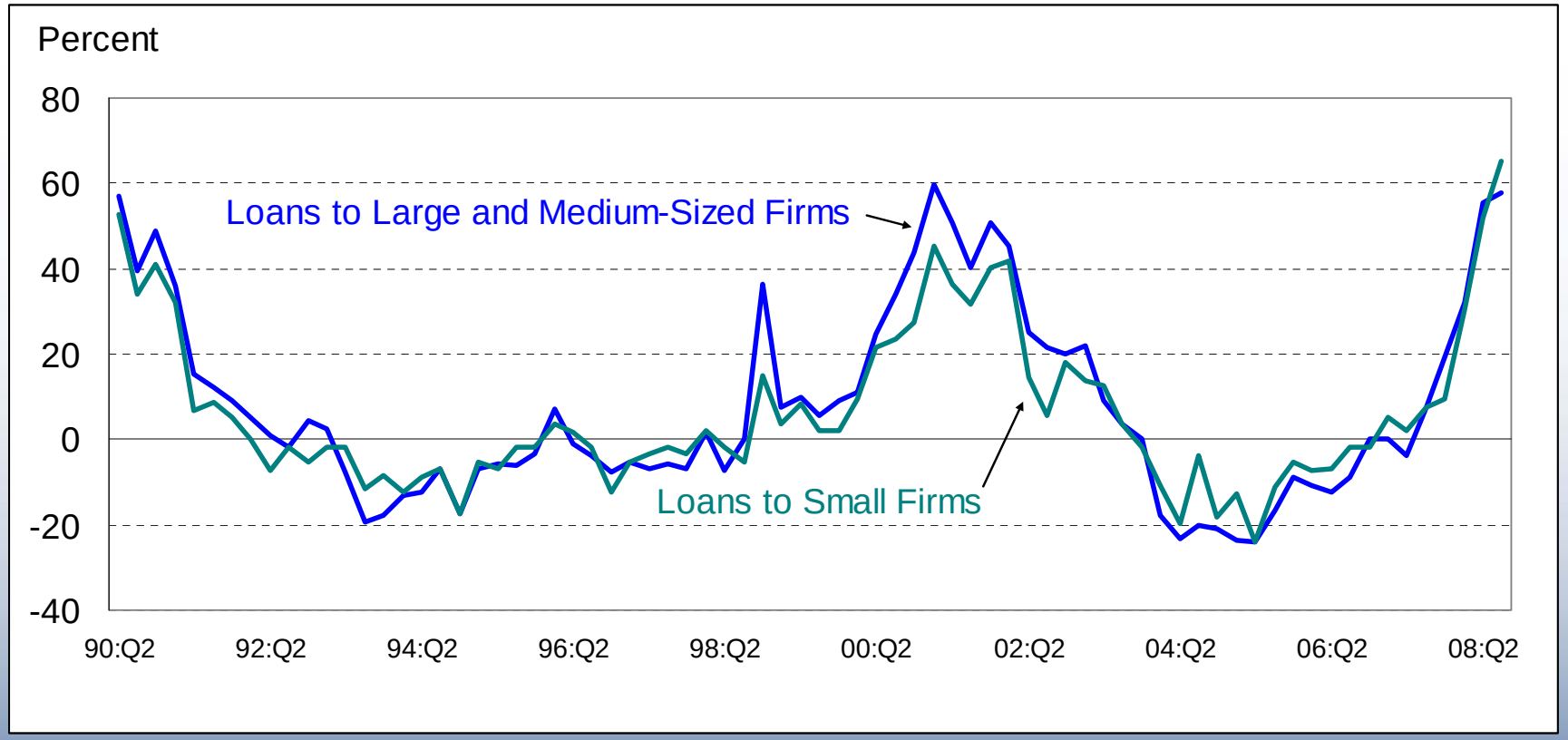
Figure 2
Share of Banking Industry Assets Held by 10 Largest Banking Organizations at Year-end



Source: Bank Call Reports

Figure 3
Net Percentage of Banks Tightening Standards for C&I Loans

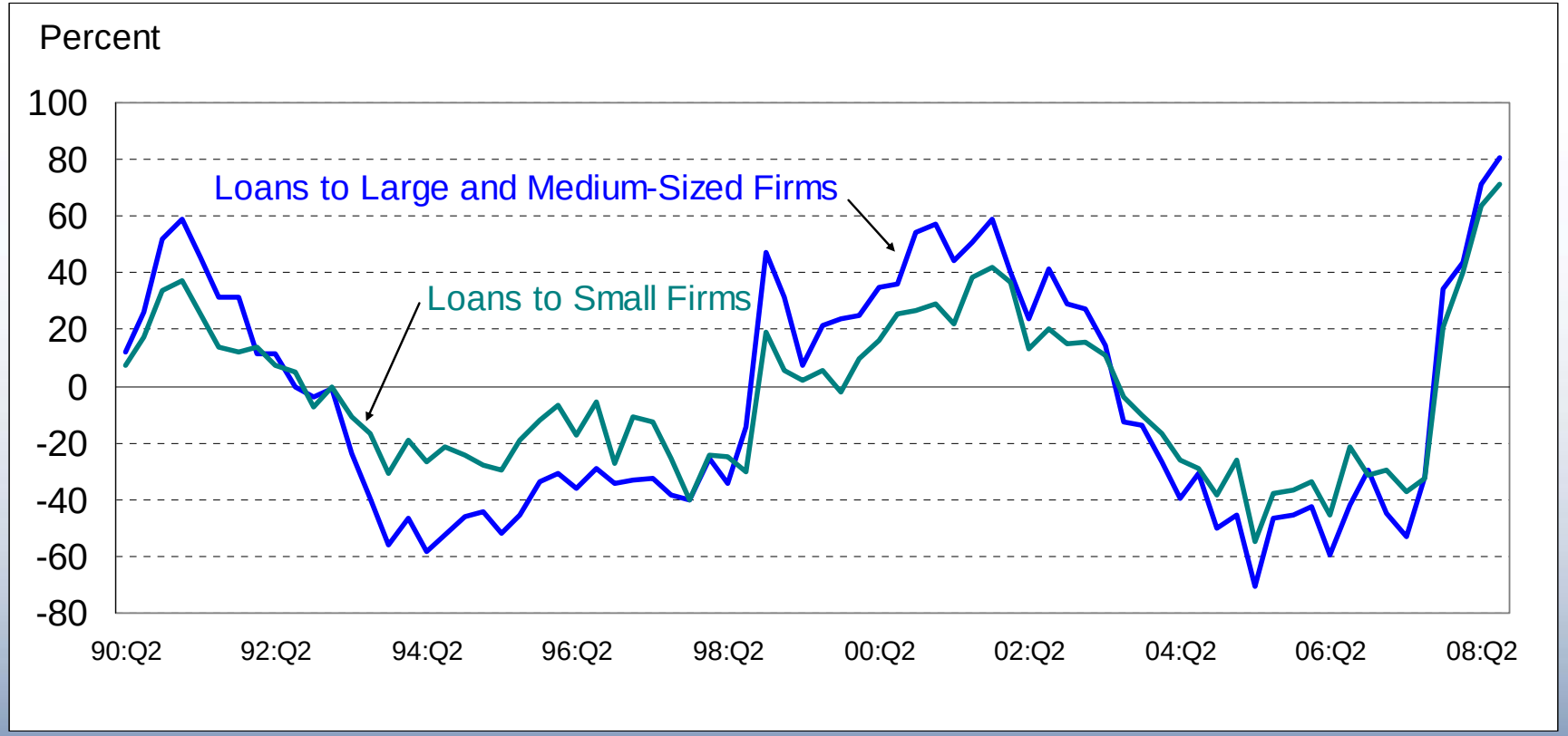
1990:Q2 – 2008:Q3



Source: Federal Reserve Board Senior Loan Officer Opinion Survey on Bank Lending Practices / Haver Analytics

Figure 4
Net Percentage of Banks Increasing Spread of C&I Loan Rate Over Bank's Cost of Funds

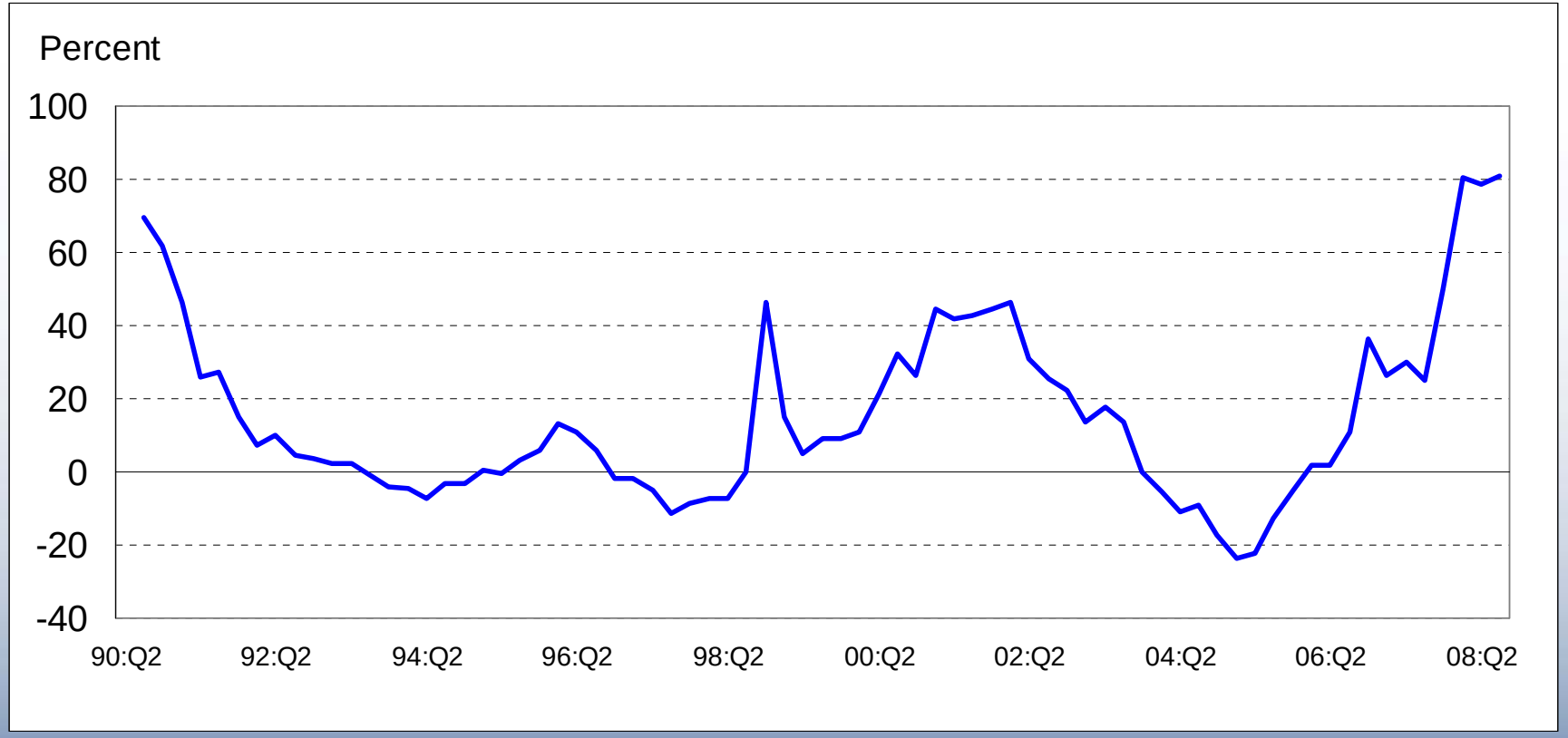
1990:Q2 – 2008:Q3



Source: Federal Reserve Board Senior Loan Officer Opinion Survey on Bank Lending Practices / Haver Analytics

Figure 5
Net Percentage of Banks Tightening Standards for Commercial Real Estate Loans

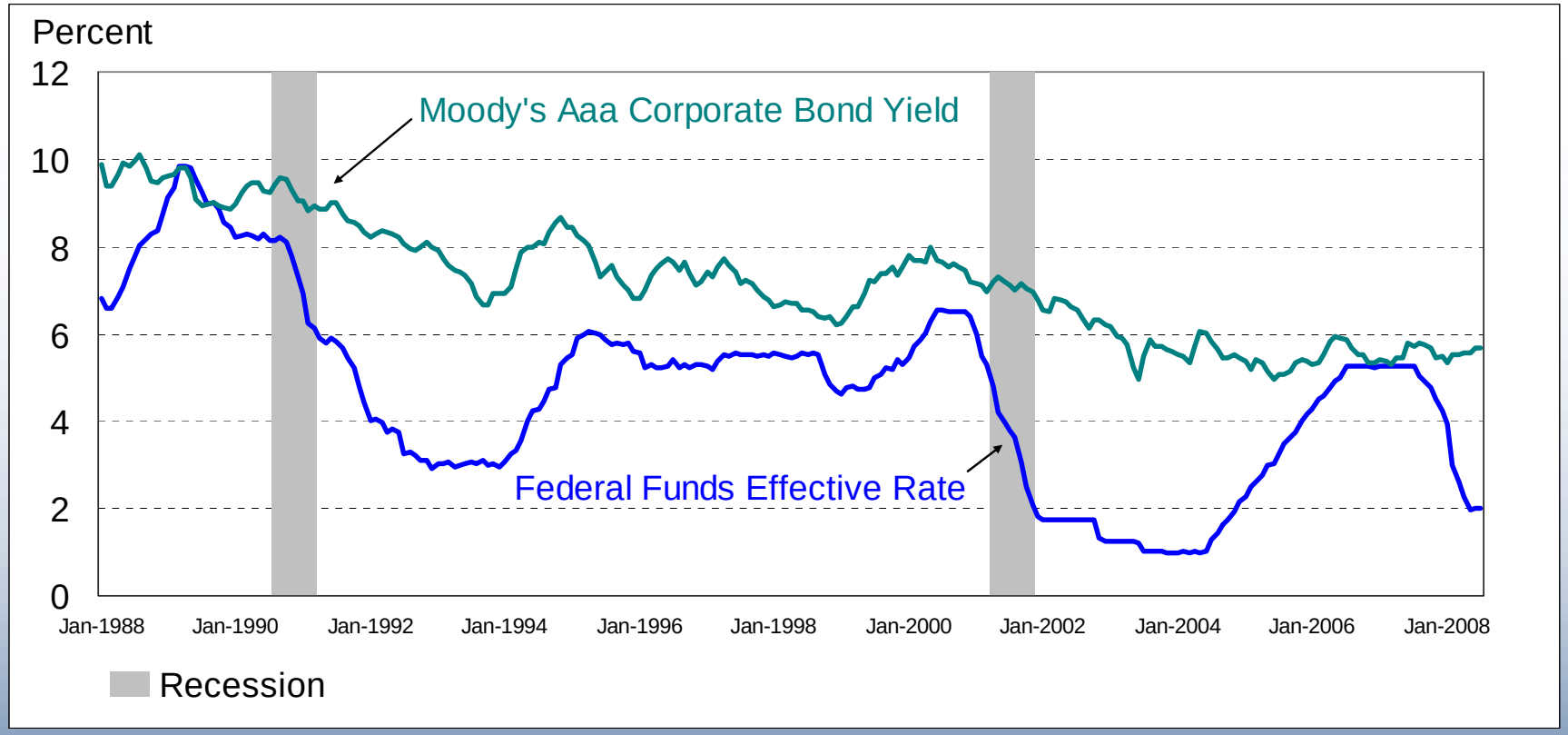
1990:Q2 – 2008:Q3



Source: Federal Reserve Board Senior Loan Officer Opinion Survey on Bank Lending Practices / Haver Analytics

Figure 6
Investment Grade Corporate Bond Yield and Federal Funds Effective Rate

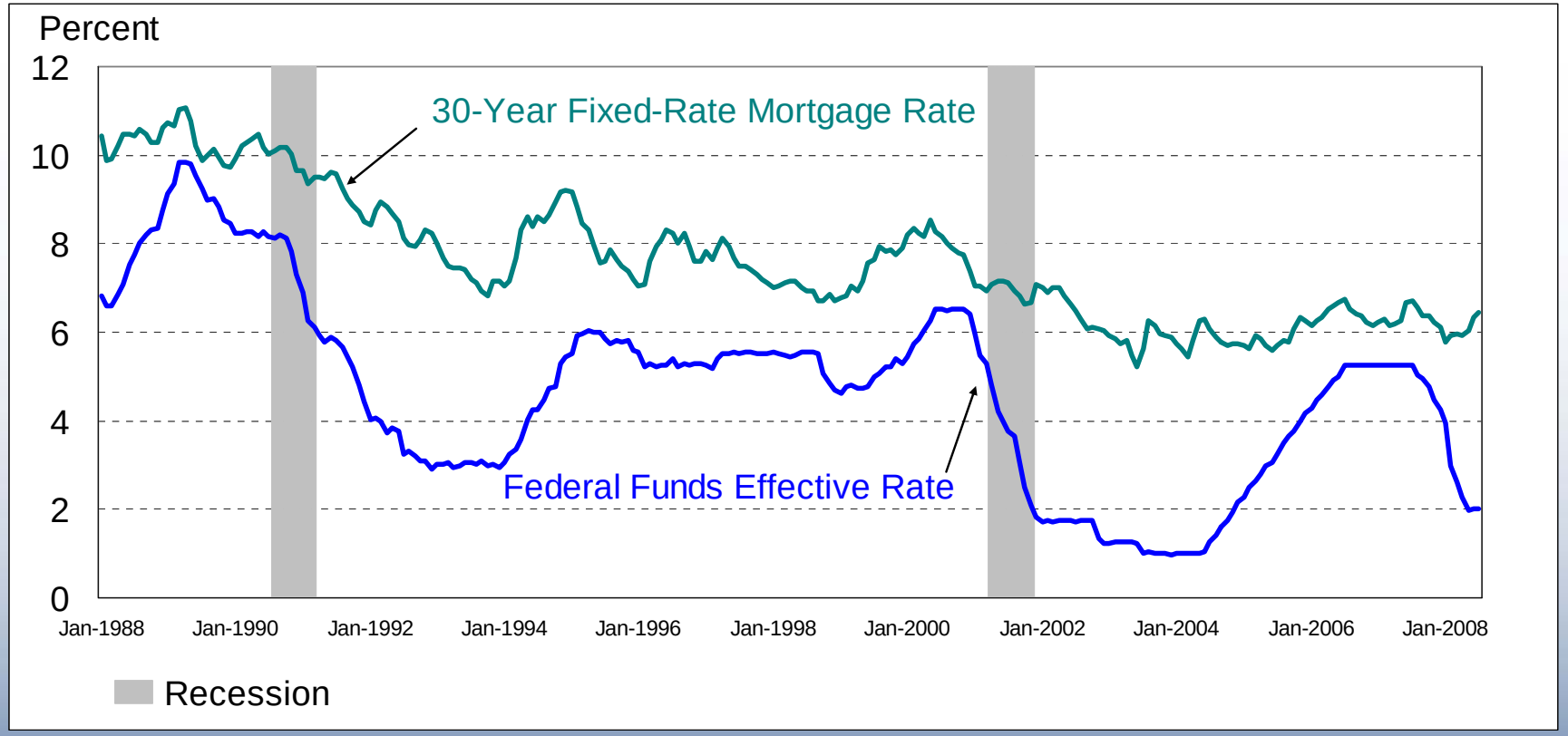
January 1988 - July 2008



Source: Federal Reserve Board / Haver Analytics

Figure 7
Conventional 30-Year Fixed-Rate Mortgage Contract Rate and Federal Funds Effective Rate

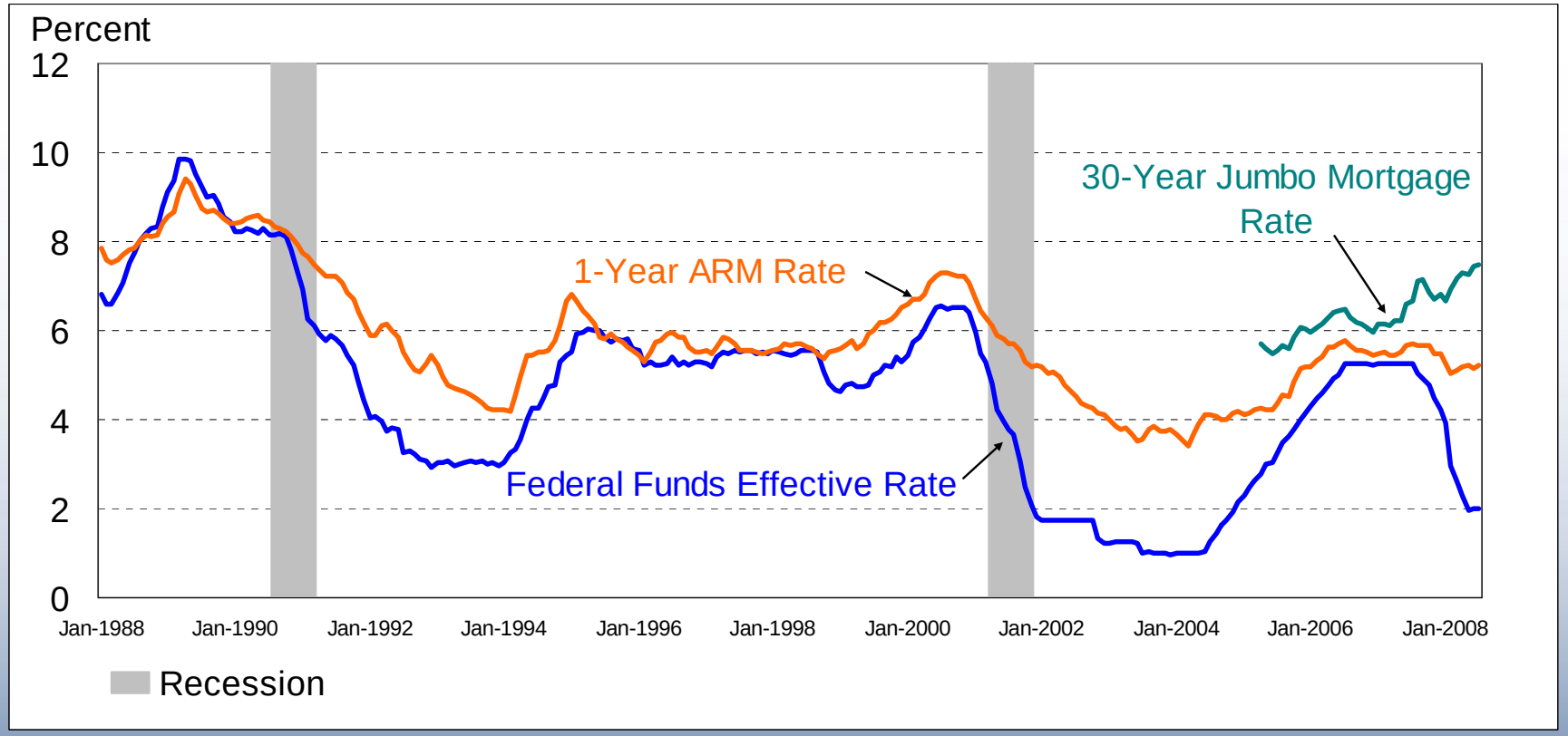
January 1988 - July 2008



Source: Federal Home Loan Mortgage Corporation, Federal Reserve Board / Haver Analytics

Figure 8
Mortgage Contract Rates and Federal Funds Effective Rate

January 1988 - July 2008



Source: Federal Home Loan Mortgage Corporation, Federal Reserve Board, Wall Street Journal / Haver Analytics