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Central Banking in the Great Recession

Donald Kohn
Brookings Institution



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Eskander Alvi, editor

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Lessons for Macroeconomic Policy

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Central Banking in the Great Recession

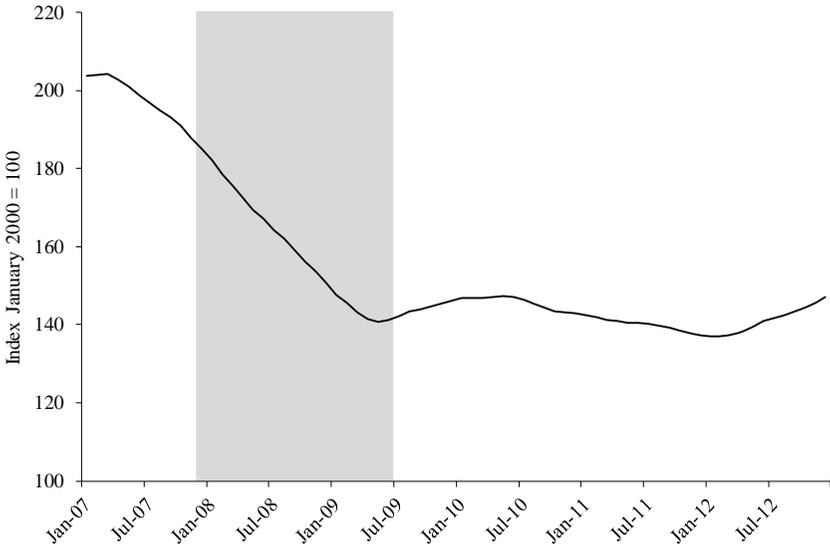
New Policies, Old Principles

Donald Kohn
Brookings Institution

In 2007 and 2008 the U.S. financial markets and economy were hit with a series of huge shocks. As shown in Figure 4.1, house prices started to fall in the summer of 2006 and eventually declined by an average of 35 percent. A superstructure of mortgage lending that had been built on the expectation of ever-rising house prices began to unravel. Mortgage loans had been made to increasingly unqualified borrowers and for speculative purposes, and it gradually became evident to lenders—and more importantly, creditors of lenders—that these loans would not be repaid and that the underlying collateral in many cases would be worth less than what was owed on the loans, leaving lenders to incur losses. Complicating the picture greatly was the fact that these loans had been bundled into securities and then sliced and diced and resold so that no one could be sure where the losses would fall. In the resulting financial panic and recession, equity prices fell by almost half, and the unemployment rate rose from 4.75 percent to over 10 percent (see Figures 4.2 and 4.3).

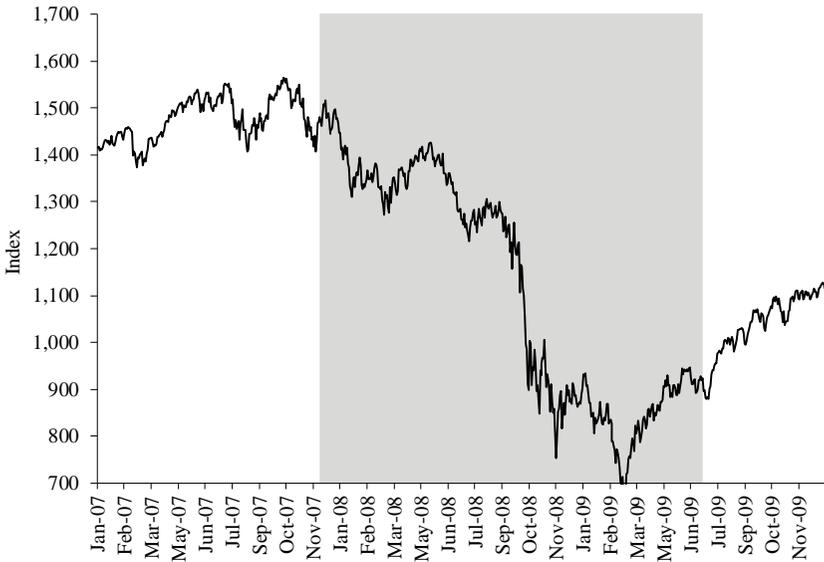
Ben Bernanke, former chairman of the Federal Reserve, and other observers have noted that the initial shock, including the doubts about the viability of financial institutions, was larger than that which started the Great Depression. Many economists, including Bernanke, have attributed the extent and duration of the Great Depression importantly to the failure of the Federal Reserve to counter the emerging problems aggressively enough. This chapter focuses on what the Federal Reserve did in the Great Recession of 2007–2009 to avoid a repeat. To this end, it undertook a series of unconventional and largely unprecedented

Figure 4.1 House Prices, 2007–2011

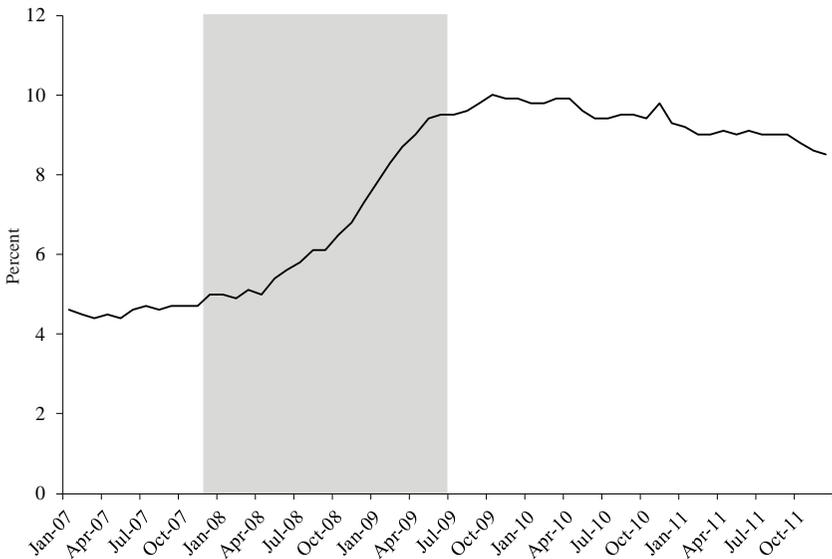


SOURCE: S&P Dow Jones Indices LLC.

Figure 4.2 Equity Prices, 2007–2009



SOURCE: S&P Dow Jones Indices LLC.

Figure 4.3 Unemployment Rate, 2007–2011

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

policy actions. But my hypothesis is that these actions did not come from nowhere; rather, they were natural extensions of policies utilized in more normal times, founded on past central bank behavior and lessons learned from previous experience in tough times, here and in other countries. I was the vice chairman of the Federal Reserve Board from 2006 to 2010, and this account is based in part on my first-hand experience contributing to the formulation and implementation of many of these unconventional policies.

POLICYMAKING IN A CRISIS

From several perspectives, managing a crisis is extraordinarily challenging. Although the Fed could and did take some broad lessons from history, the few precedents for the situation in the United States were either very old or occurred in financial systems that were much differ-

ent (the Depression) or much milder (the financial shocks of the 1980s and 1990s). In addition, the policymakers did not know the true state of the world. Market participants and the Federal Reserve were working with stale information about lenders and borrowers from outdated balance sheets and income statements. The supervisors at the Fed could supply more up to date analysis and information, but the situation was evolving rapidly, important institutions under fire were not banks and hadn't been subject to close oversight, and people in the private sector supplying new information often had vested interests in pushing the Fed toward one policy choice or another. We could observe what was going on in markets, but market prices were driven by fear and panic and did not represent underlying values that were likely to prevail over time. The lack of precedent and knowledge of the true state of the world meant that the Fed was operating largely under Knightian uncertainty—a circumstance in which it could not make good estimates of the probabilities of particular outcomes.

We had one critical advantage: Ben Bernanke's leadership. One aspect of that good fortune was his leadership style. He remained calm under severe stress, providing an anchor for the rest of us. And he was open to new ideas—sending out “blue sky” emails with lots of suggestions on new approaches and soliciting the views of others.

In addition, Bernanke is a leading scholar of the Great Depression, and he was well aware of the ways that financial crises propagate through the economic system. He was also aware of the mistakes the Federal Reserve had made that allowed that propagation to occur in the 1930s, resulting in an economic crisis of unprecedented length and severity. In a 90th birthday celebration for Milton Friedman well before the most recent crisis, Bernanke noted that, thanks to Friedman and his coauthor, economist Anna Schwartz, we now understood what we—the Fed—had done wrong in the Depression, we were very sorry, and we promised we wouldn't let it happen again. The story of 2007–2009 is what the Fed under Bernanke's leadership did to make good on that promise.

The Federal Reserve devised many unconventional and innovative policies to counter the effects of the crisis, but they were based on extensions of tried and true central bank policy tools. Those tools fell into two broad categories—lending by the Fed through its discount window and lowering interest rates in the conduct of monetary policy.

The two policies are not entirely separable: for example, lending at the discount window increased the Fed's balance sheet and led to lower interest rates, and the more successful one type of policy was the less pressure on the other. But they did have different origins, and this chapter covers each type separately.

LENDING

Large segments of the financial sector are inherently fragile, reflecting what we expect from it. When we give it our savings we often want to be able to get them back quickly and with the principle intact—we want high liquidity. However, when we borrow we do so at longer terms, say, for 3–4 years to finance the purchase of a car and 30 years to buy a house, or, for a business, for several months to finance inventory or several years to finance capital equipment and buildings. So, banks and many other financial intermediaries operate with marked maturity mismatches: their liabilities—our savings—are far shorter than their assets—our borrowing. They also tend to rely very heavily on deposits or other borrowing and very little on equity, which is a more expensive source of funds, so they are highly leveraged with small cushions of equity to absorb losses on their loans and other assets. This fragile structure rests on confidence—confidence that whenever we want to access our savings—for example, to get cash from our deposit or money fund investment—we will be able to do so and get the full amount we are expecting.

When people lose confidence in the financial sector, bad things happen. They recognize that they are more likely to be able to get their funds in full and on time if they are near the head of the line; after others have withdrawn, the institution may run out of cash or assets that can readily be turned into cash. When confidence is lost, we get runs on banks or other financial intermediaries. If enough people try to get their money back, institutions will be forced to sell often illiquid assets—and sell them at any price to meet demands for cash. That results in fire sales of assets that can drive the price of the assets well below their intrinsic value.

In 2007 and 2008 the panic originated from developments in the subprime mortgage market, but that triggered much wider duress. As house prices declined, people began to realize that many lenders faced large losses. However, the mortgages had been packaged together and those packages had been broken up and repackaged in complex and opaque ways. Consequently, no one could be sure where the losses would eventually be absorbed, and there was a more general pulling back from lending to a variety of financial institutions. The financial institutions under stress needed to sell assets, driving down the price of mortgages and other assets even further, raising more questions about the viability of lenders and provoking further withdrawals. A Wall Street/financial institution death spiral was under way.

Critically, when lenders are under pressure they pull back from making new loans. Credit for households and businesses tightens up, or in the extreme dries up entirely. When we can't borrow to buy goods and services we cut back spending, which causes businesses to lay off workers, who in turn may have to default on loans and reduce spending further, deepening the recession and financial sector stress. The Wall Street death spiral becomes a Main Street death spiral.

The central bank's tools to deal with a Main Street death spiral are limited. The Fed can't step in and lend directly to households and businesses—it is not equipped to make those types of decisions, and we wouldn't want an institution that is both public sector and politically independent closely involved in allocating credit by picking and choosing among loan applicants. What it can do is intervene in the financial sector, reducing the pressure on banks and other institutions to end the runs and fire sales and keep credit flowing to Main Street.

The person who first recognized and formulated the policy for the central bank in a panic was Walter Bagehot, and he did so in the middle of the nineteenth century, after watching the Bank of England deal with financial panics in the City of London. He said the central bank should lend to banks and other institutions freely so they can meet deposit withdrawals and pay back lenders. Central banks should lend against illiquid but still good collateral, giving the banks a source of funds they could access without engaging in fire sales of assets. By being ready to make liquidity available to banks and other institutions, central banks would assure depositors and other lenders that they could get their funds back when they asked for them, so they didn't need to line up to

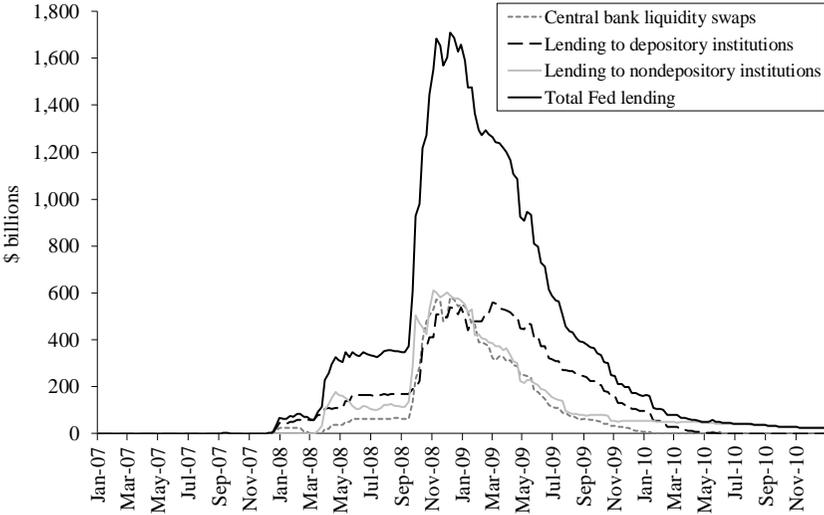
withdraw, forestalling or at least limiting panics. In effect, the central bank would provide liquidity insurance to banks and sometimes other intermediaries; special government intervention was justified by the key role financial institutions play in the broader economy, intermediating between savers and spenders and operating the payments system. Indeed, the Fed was founded in 1913 in large part because the absence of a lender of last resort had made financial panics in the late nineteenth and early twentieth centuries more destructive than they would have been if a lender had been ready to step in.

But lending freely against good collateral was not the end of Bagehot's advice or of the central bank playbook based on his recommendations. Any insurance carries moral hazard—it reduces the incentives for the buyers of the insurance to take steps to protect themselves. Two other elements in the central bank playbook for lending into a panic are designed to limit that moral hazard. First, lend only to solvent institutions; do not keep alive institutions that have made so many fundamentally bad decisions they have run through their shareholder capital. And second, charge a penalty rate relative to the rates that will prevail once market functioning is restored; higher rates mean that the central bank will be the lender of last resort—after private sector funds dry up—and will induce borrowers from the central bank to repay when markets normalize.

The Federal Reserve implemented the Bagehot-based rule book. As Figure 4.4 shows, it lent in great size during the crisis—especially after generalized market panic that followed the failure of Lehman Brothers. Total discount window lending, which is normally close to zero, shot up to nearly \$1.8 trillion in early 2009. But it also lent at a penalty to market rates, so as markets stabilized and financial institutions were recapitalized by the government and in the markets, lending subsided fairly rapidly over 2009.

Although lending mostly followed the Bagehot principles, the Fed found it had to innovate in several ways to achieve its objectives of stemming the panic and promoting greater availability of credit to households and businesses. Banks are the usual counterparties of the Federal Reserve at the discount window, but banks became reluctant to use the window because they feared looking weak, which might feed a run instead of stopping it. This stigma got in the way of the Fed's ability to supply liquidity and avert credit tightening when uncertainty about

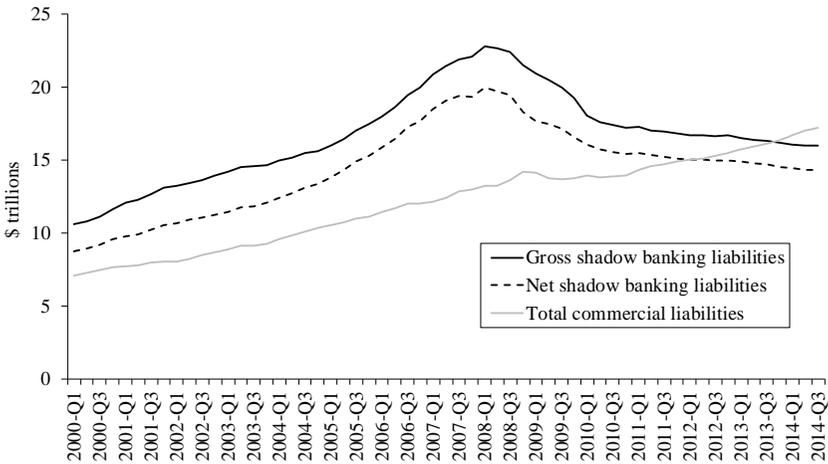
Figure 4.4 Lending by the Federal Reserve



SOURCE: Federal Reserve Board, Flow of Funds.

counterparty risk disrupted interbank funding markets. It then began to make the credit to banks available in auctions in which many participated so no one stood out.

A critical characteristic of the events of 2008 was that the panic wasn't limited to the banking system. Figure 4.5 shows intermediation involving securitization of loans and money market lending outside banks themselves—dubbed the shadow banking system—rose substantially before the crisis. The securitization of mortgages meant that they were spread throughout the financial system and often not held in banks. In many respects, that was fine because risk was widely dispersed, often among long-term holders. But a lot of the pieces of securitized mortgages were held in financial structures that looked and behaved like banks in that the long-term mortgages were financed by short-term debt and backed by little if any equity to absorb losses. Some of those structures were attached in one way or another to banks and came back to them as confidence evaporated. But vulnerabilities extended well beyond the banking system, and runs spread to broker-dealers holding mortgage securities, money market funds lending to the

Figure 4.5 Shadow Banking Liabilities, 2000–2014

NOTE: Gross measure sums all liabilities recorded in the flow of funds that relate to securitization activity (MBS, ABS, and other GSE liabilities), as well as all short-term money market transactions that are not backstopped by deposit insurance (repos, commercial paper, and other MMMF liabilities). Net measure attempts to correct for double counting (Pozsar 2010).

SOURCE: Federal Reserve Flow of Funds, Haver Analytics.

broker-dealers, and other elements in this so-called shadow banking system. The United States is generally fortunate to have well-developed securities and securitization markets alongside its banks; they can keep the credit flowing when the banks are in trouble and not lending. But in 2008 all elements of the system were subject to runs and fire sales as confidence evaporated; the problems in the nonbanks were having serious adverse effects on the abilities of households and businesses to borrow. In response, the Federal Reserve activated an authorization to lend to nonbanks that it hadn't used since the 1930s. It lent to broker-dealers, to money market funds, to issuers of commercial paper, and to buyers of securitized debt to limit the damage to the economy from the panic afflicting financial markets.

It wasn't only problems at U.S. banks and markets that were damaging the U.S. economy; many foreign banks also were in trouble in their transactions in dollars, and that was feeding back badly on U.S.

financial markets. In the years leading up to the crisis many foreign banks, attracted by the high rates and the high ratings from the credit rating agencies, invested in pieces of subprime mortgage securitizations. These banks were funding those investments with short-term borrowings and deposits, often not in dollars but instead with domestic deposits the banks subsequently converted into dollars in short-term markets, like swap markets. As confidence in the banks waned, they lost access to swap markets, and they needed to bid more strongly directly in U.S. markets for dollars; this was putting upward pressure on U.S. interest rates at a time when the Fed was trying to hold those rates down to fight recession.

The Fed could and did lend directly to foreign banks operating in the United States at its discount window, but in many cases it didn't have the information to judge whether the borrowing bank was solvent or whether the collateral it had to offer was sound. So, the Federal Reserve lent dollars to foreign central banks to lend to their domestic banks, allowing the foreign central banks to make those difficult judgment calls. That lending between central banks was called "central bank foreign currency liquidity swaps," and the loans were unprecedented in the size and the purpose for which they were made.

I have already noted the high degree of uncertainty that faced the central bank in coping with the crisis. Of course, the private sector was dealing with the same phenomenon. In particular, lenders to financial institutions and other borrowers were concerned that they couldn't judge the depth of the likely losses in their counterparties, which could prove considerable in a period of unprecedented declines in asset prices. Lenders might be willing to take some risk, but the potential for very large losses impeded their willingness to extend funding. So, the Fed, for several of its facilities (sometimes together with the Treasury's TARP facility) took on this tail risk—it would absorb extremely large losses once the private sector had taken some losses. Although the Fed didn't take any losses of this sort, its willingness to do so helped bolster private lender confidence and restore the more normal working of the markets.

Did these lending facilities work? Yes, eventually. They didn't prevent a panic, especially after the failure of Lehman Brothers, but they did limit the extent of the damage to the markets and the economy and, by boosting confidence, helped to restore more normal functioning of

the markets. They didn't prevent panic in part because the law requires that to activate lending to nonbanks, the Federal Reserve Board must find that a deeply problematic situation already prevails—the circumstances are “unusual and exigent” and credit is not otherwise available. By necessity, these nonbank facilities had to be put into place in response to panicky situations that had already developed.

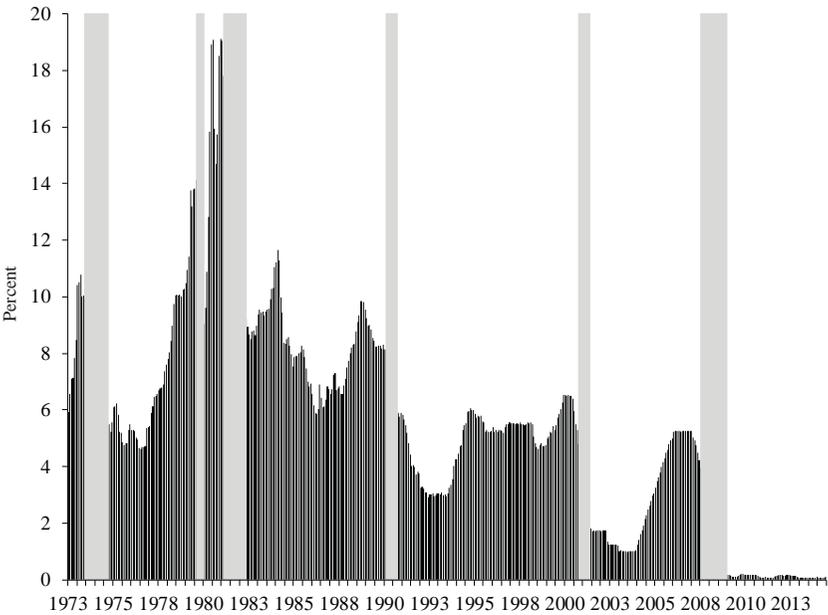
Were they “bailouts”? The funds were advanced when private credit was not available, and without the Fed's lending, many more institutions would have gone under. But they were loans, not capital injections, for the most part to solvent institutions that were denied access to markets because of developments beyond their control, fully in keeping with the Bagehot principles and the intent of the writers of the Federal Reserve Act.

However, there were also borderline situations when the liquidity needs of troubled institutions were met through special facilities. These were uncomfortable for the Fed, but the authorities, including the Treasury as well as the Fed, judged that the failure of the particular institution would have had major adverse consequences for the economy, and alternative methods for dealing with the situation were not available. Now they are. The Fed strongly backed a part of Dodd-Frank that gave the FDIC, working with the Fed and other authorities, new powers to resolve troubled financial institutions without endangering the stability of the financial system. Loans to individual troubled institutions are not permitted after Dodd-Frank, but the alternative should be effective in protecting stability while allowing institutions to fail in an orderly way.

MONETARY POLICY AND INTEREST RATES

The second main strand of Federal Reserve policy in the crisis involved the setting of interest rates—monetary policy. Through its announcements and open market operations to add and subtract reserves from the banking system, the Fed exerts very close control over an overnight interest rate—the federal funds rate. As Figure 4.6 shows, in a recession, the Fed normally reduces this rate to fight unemployment and keep inflation from falling much below its target. Lowering the federal funds rate—or market expectations that it will be lowered—

Figure 4.6 Federal Funds Rate, 1973–2013



SOURCE: Federal Reserve Board and Haver Analytics.

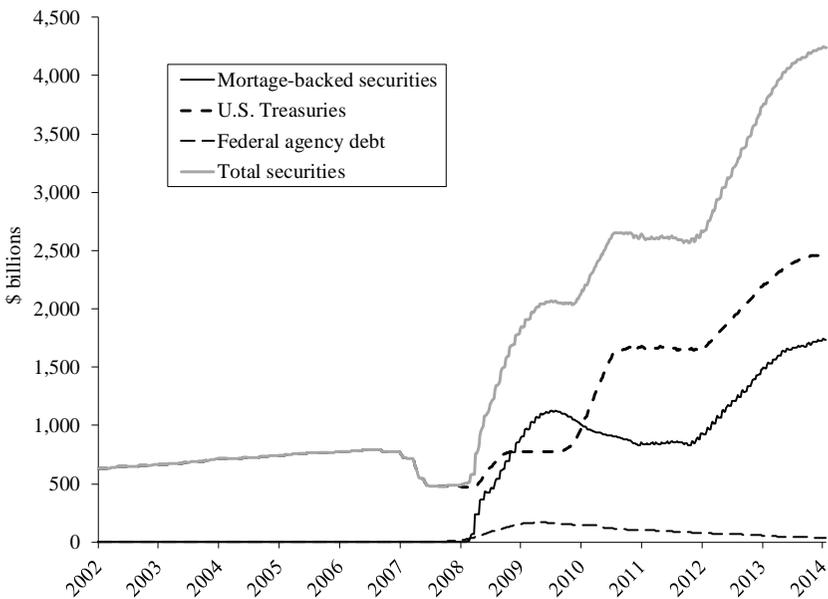
generally leads to decreased intermediate and long-term interest rates. Lower intermediate and longer-term rates make it cheaper for people to borrow to buy cars and houses, and for businesses to finance new capital equipment and buildings. They also tend to raise asset prices, which is especially important for equities and houses because that’s what constitutes household wealth, and when people are wealthier they tend to spend a little more because they don’t need to save as much for the future. Lower interest rates also tend to depreciate the dollar on foreign exchange markets as investments in foreign assets look to return more relative to investments here in the United States; a lower dollar makes our exports more affordable to foreigners and makes their products less affordable for U.S. residents, shifting spending to the output of U.S. factories.

Lower interest rates, higher wealth, and a cheaper dollar all tend to boost spending. Greater spending puts people back to work, and the

extra demand keeps inflation from falling below the Fed's target or causes inflation to rise once it is already below target. In the fall and winter of 2008–2009, the United States was in a deep recession, but the federal funds rate was already at zero. Fortunately, several economists, including Ben Bernanke, had thought about what to do in this situation, which Japan had been facing for some time. The advice was to intervene in the financial markets further along the chain—reduce intermediate and long-term rates directly, which in turn should stimulate spending through all the channels mentioned above—cost of credit, wealth, and exchange rates. It would also bolster confidence and encourage risk taking at a time when lenders were extremely risk averse. Two separate techniques were used to reduce intermediate- and long-term interest rates: buying longer-term debt and giving more information about policy intentions to lower expectations about the path of interest rates in the future.

The Fed called the first technique *large-scale asset purchases*, but everyone else called it *quantitative easing*. The assets purchased were mortgage-backed securities (MBS) guaranteed by Fannie Mae and Freddie Mac, securities issued by these two agencies, and U.S. Treasury bonds. The Fed started by announcing definite amounts—e.g., \$1.25 trillion—but, after several iterations with specific amounts, finished with an open-ended commitment to buy long-term Treasuries and MBS at a pace of \$85 billion per month until the economy had improved enough that this extraordinary action was no longer needed. In fact, purchases continued at this pace from the fall of 2012 until December 2013, after which the pace of purchases was phased down gradually (tapered) until October 2014, when they stopped altogether. As Figure 4.7 shows, the securities portfolio of the Fed had reached nearly \$4.5 trillion by that time, up from under \$1 trillion before the crisis.

How was this supposed to work? The purchases had several effects on markets. By increasing the demand for the long-term securities that were being purchased, they raised the price and lowered the yield. Lower yields on Treasuries and MBS caused investors to look around for other, higher-yielding, assets, such as equities and corporate bonds; and the investors who sold the Treasury bonds and MBS now had cash to redeploy to other long-term assets. In these ways, the Fed's purchases in particular segments of the securities markets were transmitted to financial markets more broadly. In addition, the announcement of the

Figure 4.7 Federal Reserve Securities Portfolio, 2002–2014

SOURCE: Federal Reserve Board.

purchases likely signaled the Federal Reserve's determination to use unconventional policies to promote a return to full employment and get inflation up to its 2 percent target, reinforcing its messages that interest rates would be low for a long time.

The second technique to lower intermediate and longer-term rates was to make that message about the expected path for the federal funds rate in the future much more explicit than usual—that is, give *forward guidance* on interest rates. The Fed used a variety of formulations of its language about the path of rates to convince markets that the rate would remain essentially at zero for quite some time—longer than market participants might otherwise have anticipated. The expected path for short-term rates is a key component in determining long-term rates, and the Fed's intention through its assurances about holding rates low for long was to lower longer-term rates—or to keep them from rising before the Fed thought it consistent with achieving its employment and inflation objectives.

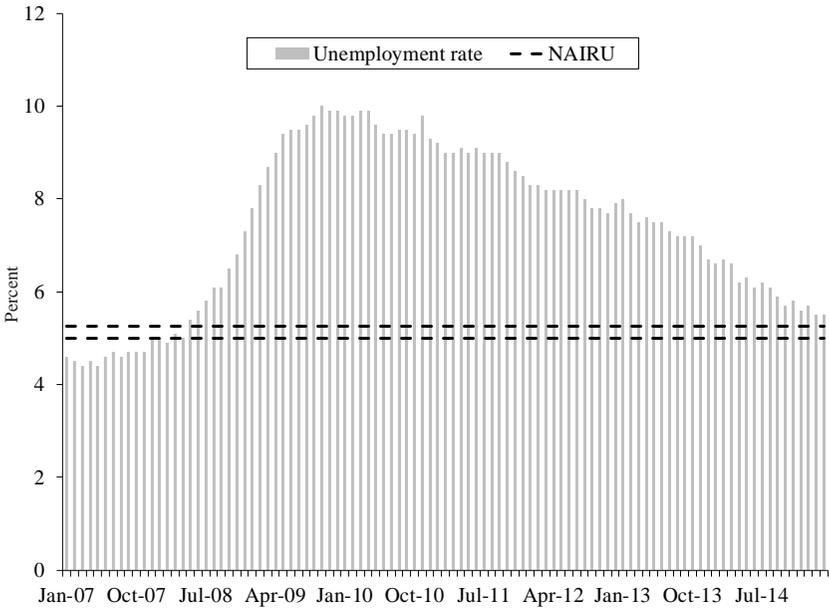
Like asset purchases, the specific form of the guidance evolved over time. What began as very vague guidance—“for some time” and “for a considerable period”—shifted to more precise time-based guidance—“at least through mid-2013” and then “at least through 2014.” The language became more focused on economic conditions—“at least until unemployment falls below 6.5 percent, provided inflation does not exceed the 2 percent target by more than one-half percent”—and then moved to a combination of economic conditions keyed to progress towards its objectives and time—it would be “patient” in raising rates. In 2014, it dropped the “patient” language and focused only on actual and expected progress toward its inflation and employment goals.

The Fed needed to return to these monetary policy tools multiple times over an extended period because the recovery from the very deep recession was so slow and disappointing. The Fed’s legislation gives it two mandates: “maximum employment and stable prices.” Maximum employment is interpreted as the highest level that can be sustained over time without promoting ever increasing inflation. That goal is usually expressed in terms of the unemployment rate—how low can it go without creating inflation problems. In 2014, the central tendency of the participants at Federal Open Market Committee meetings is that the unemployment rate could go to 5 to 5.25 percent on a sustained basis without untoward inflation developments, and that level was broadly in alignment with the estimates of many outside economists at that time. But as shown in Figure 4.8, the unemployment rate did not come down to that level until early 2015.

For stable prices the Fed has set a target of 2 percent inflation measured by the PCE deflator. That goal is plotted in Figure 4.9, along with realized inflation. The 2 percent goal is shared by many central banks around the world. It’s not zero because that would risk falling into a costly deflationary spiral too often. And, inflation below 2 percent on average would mean interest rates would be very low on average, giving the Fed little room to ease its fed funds target if bad things happened to the economy.

Until 2015, the economy operated with a far weaker labor market than consistent with “maximum employment”; moreover, in the period after the crisis inflation ran consistently below the 2 percent target. The Fed anticipated that the recovery from the very deep recession would be slower than most recoveries from deep recessions. We entered the

Figure 4.8 Unemployment Relative to Full Employment, 2007–2015

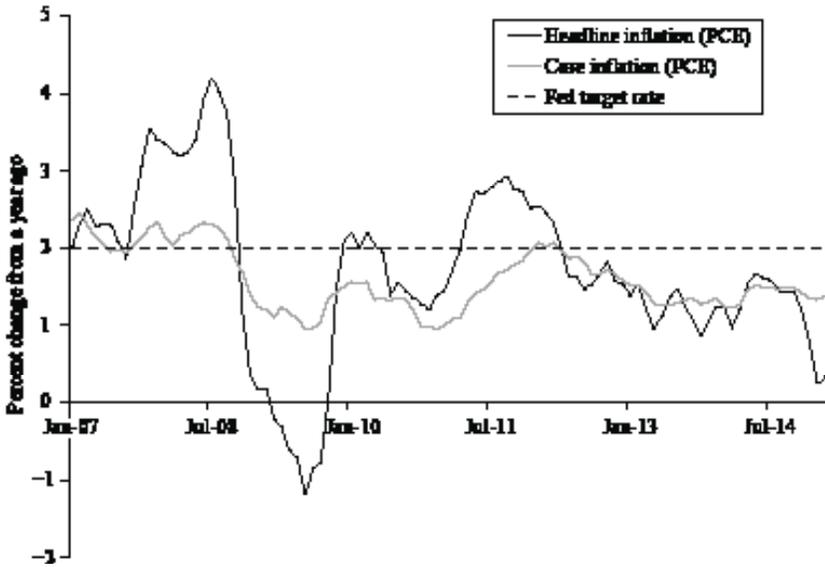


NOTE: NAIRU = Nonaccelerating inflation rate of unemployment.
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, and Federal Reserve Board Federal Open Market Committee minutes (for NAIRU estimates).

recession with an overhang of houses on the market, with households having incurred unsustainable levels of debt, and with lenders having deeply impaired balance sheets as households and businesses defaulted on debts in the housing downturn and recession. Rebuilding balance sheets takes time and elevated saving. But the economic expansion has been disappointing even relative to these restrained expectations, and inflation has persisted below target; as actual economic activity and prices fell short, the Federal Reserve judged that it needed these repeated rounds of policy easing to hit its legislated goals.

Given that disappointment, *did the policy easing work?* The studies of the Fed’s announcements on financial conditions generally have shown that the actions were effective in lowering interest rates and raising asset prices. The effects might have been greatest in the Treasury

Figure 4.9 Inflation Relative to Federal Reserve Target, 2007–2015



SOURCE: Bureau of Economic Analysis and Federal Reserve Board Federal Open Market Committee minutes (for target estimates).

and MBS markets, where the purchases were made, but they seem to have fed through to some extent into other markets where households and businesses borrow and invest. What is much harder to show, not surprisingly considering the lackluster recovery, is that the lower interest rates and higher equity prices had a substantially positive effect on spending. Models drawing on historical relationships say they did, and so does the logic in this chapter. Some of the “headwinds” the economy faced were not anticipated—for example, eurozone problems beginning in 2010, restrictive U.S. fiscal policy in 2012 and 2013, and very tight credit conditions continuing for longer than expected in residential real estate markets. I believe that the recovery and expansion would have been even weaker than we experienced if the Fed had not been so aggressive.

CONCLUSION

Ben Bernanke said during the crisis that he didn't agree with some of what Franklin Roosevelt did to get out of the Depression, but he admired Roosevelt's determination to try new things until something worked. That was one lesson underlined by the Fed's response to the crisis: in unprecedented circumstances, innovate until you find something effective. At the same time, those innovations need to be based on deep thinking about the nature of the problems and the tools at hand to deal with them. The Fed couldn't inject capital into the financial system—that was for TARP—but it could supply liquidity very broadly, and it could ease financial conditions through a variety of techniques to lower interest rates in order to stimulate spending.

Among the most difficult aspects of crisis management was explaining to Congress and the public what the Fed did and why. Bernanke tried to explain the link between the Fed's actions and Main Street, for example, through two interviews on the TV show *60 Minutes*, but the unprecedented nature of the actions compounded the problem of explanation; lending is why the Fed was founded, but it hadn't engaged in that sort or scale of crisis management in many decades. There was no precedent for the assets purchases it engaged in, allowing the imaginations of some observers to conjure up all kinds of adverse consequences that, to date, have not materialized. And transparency about some of the actions—for example, who took its loans—could run counter to the efficacy of the policy. Public misunderstanding was widespread and echoed (and amplified) in the Congress. The Federal Reserve was perceived to be bailing out large banks and Wall Street more generally, sometimes perceived to be at the expense of Main Street. On monetary policy, it was arguing the counterfactual—it would have been worse without its actions.

Despite the difficulties of explication and understanding, evidence and analysis strongly support the conclusion that the Federal Reserve's actions limited the damage to jobs and income from plunging real estate prices and expedited the return to the agency's objective of "maximum employment and stable prices."