

CHAPTER 5

Federal Reserve Policy Before, During, and After the Fall

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The exact dating of the financial crisis that gripped the world and precipitated a severe worldwide recession late in the last decade is somewhat up in the air—even a bit arbitrary. I favor August 9, 2007—Paribas Day—as the start date, but other choices are equally plausible; and the run-up to the crisis surely extends back years before that. The signal event of the entire sorry episode, however, is clear. It happened on September 15, 2008, when Lehman Brothers filed for bankruptcy. Pretty much everything that hadn't fallen apart previously came crashing down after Lehman Day. The crisis also truly went global at that time.

Correspondingly, my evaluations of the Federal Reserve's policy actions are dramatically different pre- and post-Lehman Day. In brief, the Fed deserves mixed but rather poor grades for the years and days leading up to (and including) the fateful Lehman decision, but quite excellent grades thereafter. Most of this short paper is devoted to explaining that last sentence.¹

Before the Fall

There is almost universal agreement that regulatory neglect, especially in the mid-2000s, helped set the stage for the financial crisis—and that while some of the regulators' somnolence was obvious only after the fact, much of it was obvious beforehand.² There is so much blame to go around the regulatory community that it is nice (for the Fed) that blame can be shared among six different agencies (in the United States) plus the US Congress (e.g., for passing the odious Commodity Futures Modernization Act [CFMA] in 2000). Yet the Federal Reserve gets, and probably

1. For much greater detail on the issues discussed here, and many other issues as well, see Blinder (2013).

2. See Financial Crisis Inquiry Commission (2011).

merits, a healthy share of the blame because (a) it was the only regulator with systemic responsibilities (tacit then, explicit now), (b) it was (and remains) the *primus inter pares* among financial regulators, and (c) it had been assigned by Congress special responsibilities for both mortgages and consumer protection.

Starting with some perspicacious warnings from then-Governor Ned Gramlich as early as 2000, continuing through an early 2002 article by economist Dean Baker, and including numerous press reports in 2003 and 2004, the Fed had ample warnings that something—indeed much—was amiss in the residential mortgage market, especially in the subprime sector.³ It ignored them all. Notably, the Fed and other bank regulators did not need to go to Congress for any additional authority in order to crack down on the patently unsafe and unsound lending practices, or on the abusive and even predatory loan terms, that were visible all around them. Their pre-existing legal authority was ample; they just didn't use it. And under malign neglect, bad went to worse.⁴ For this abysmal performance, all of America's bank regulators, including the Fed, deserve a failing grade.

But that was not all. Financial regulators allowed far too much leverage to build up in the system. Prominently, the Securities and Exchange Commission (SEC) permitted what can only be called reckless levels of leverage at the nation's five giant investment banks. The Federal Reserve and the Office of the Comptroller of the Currency (OCC) seemed either unaware of or unfazed by the hyper-leveraged structured investment vehicles (SIVs) that sprouted alongside the balance sheets of many of the biggest commercial banks. The Office of Thrift Supervision was an embarrassment—and was subsequently abolished. No one seemed to pay any attention to the titanic amounts of leverage embedded in certain derivatives, which were exploding in volume, perhaps because Congress had instructed regulators not to look. Leverage embedded in derivatives poses particularly difficult challenges for regulators since, while most derivative contracts start at a zero net position (hence are neither an asset nor a liability), they can move sharply in either a negative or a positive direction. It is the exposure, not the literal amount of leverage (assets divided by capital), that matters.

3. See Baker (2002), Temkin, Johnson, and Levy (2002), and Andrews (2004).

4. In (undeserved) fairness, the most outrageous mortgage lending probably happened outside the regulated banking industry. But what went on inside banks was bad enough.

One good question to ask is: could the Fed have stopped the leverage binge with the weapons at its disposal at the time? Certainly not fully, and certainly not by itself. For example, the SEC was needed to deal with the most serious leverage addicts: the big investment banks. That said, the Fed and the OCC could and should have arched more eyebrows sternly at bankers, informed themselves better about SIVs, and worried more about exposures from derivatives than they did. Much more. And that would have helped.

So far, I've dealt only with regulatory *behavior*, which was not a pretty picture. But there were also huge problems with the regulatory *structure*, which was plagued by both silos and gaps. Prior to the crisis, as now, we had too many bank regulators. Partly for that reason, the Fed would often run into jurisdictional roadblocks when it sought to cross over the border between the bank holding company (the Fed's jurisdiction) and the bank (the OCC's jurisdiction). Worse yet, the central bank had essentially no regulatory window into the pure investment banks. In addition, most of the shadow banking system—including, prominently, mortgage brokers and mortgage banks—were effectively unregulated. The situation in the over-the-counter derivatives business was even worse, since CFMA actually *banned* their regulation. None of this was the Fed's fault.

But what about monetary policy? Some critics have blamed the Fed's low-interest-rate policy in 2002–2004 (the Fed started tightening in June 2004) for encouraging leverage, providing the raw material for risky “carry trades,” and, in general, aiding and abetting speculation such as the housing bubble.⁵ With the benefit of hindsight, the Fed probably did keep money and credit too loose for too long. But unlike its regulatory laxity, that “error” was far from obvious contemporaneously. After all, the US economy was struggling to escape from the slow “jobless recovery” that followed the 2001 recession. The compound average annual growth rate of real GDP from the third quarter of 2001 through the first quarter of 2003 was a paltry 1.9 percent. It looked like the economy needed help.

Perhaps more fundamentally, one can ask whether short-term interest rates that were, say, even 1–2 percentage points higher, and mortgage rates that were perhaps 0.6–1.2 percentage points higher, would have stopped the housing bubble in its tracks.⁶ The case of the United Kingdom, where

5. One prominent example is Taylor (2009).

6. Interest rates 3–4 percentage points higher would have almost certainly caused another recession.

the Bank of England kept short rates well above Federal Reserve levels throughout, suggests not. So does common sense when prospective home-buyers were expecting (no doubt, irrationally) 10–20 percent capital gains *per year*. Notice also that the housing bubble did not burst even after the Fed started raising the federal funds rate in June 2004. (The funds rate eventually went up by a cumulative 425 basis points.) House prices kept rising for at least another two years.⁷

So I agree that the Fed kept monetary policy too loose for too long in 2002–2004. But that “mistake” was small, forgivable under the circumstances, and may not have done much harm.

The Panic of 2007–2009

On monetary policy, the Federal Open Market Committee (FOMC) was a little slow on the draw, seeing the continuing financial crisis as more of a technical issue regarding illiquidity than a macroeconomic issue calling for monetary easing. For example, it was still calling high inflation its “predominant policy concern” as late as its August 7, 2007, meeting—just two days before Paribas Day! The committee was soon having second thoughts about that judgment. But it did not cut interest rates until September 18, and then it waited another agonizing six weeks before cutting rates again. The Fed only really seemed to “get it” in December 2007. But once the FOMC started moving in earnest, it moved fast, lending huge amounts and lowering interest rates. The federal funds rate, which had been at 5.25 percent on September 17, 2007, was down to virtually zero by December 16, 2008. Its interest-rate reactions dwarfed, e.g., those of the European Central Bank.

The Fed’s massive emergency lending, much of it under the pliable section 13(3), followed the lines Bagehot had prescribed in 1873—sort of. The central bank lent freely against collateral that, if not always “good,” was at least decent, and charged a (very small) penalty rate. And just as Bagehot prescribed, the Fed’s lending rose from about zero on Lehman Day to a titanic \$1.5 trillion and then receded “naturally” back to about zero as the panic eased and banks no longer needed central bank credit. It was, as it should have been, a temporary operation.

7. The words “at least” connote that housing prices peaked at different times, depending on which prices index you use.

Finally, however, I should mention what I believe was the Fed's biggest error of all: letting Lehman Brothers fail so messily, in a jumble of bankruptcy proceedings.

First, it must be admitted that:

- The Fed would have been crawling out on a long limb had it rescued Lehman without approval from the Treasury; so the US Treasury shares the blame.⁸
- There was legitimate concern about how much good collateral Lehman could have posted to secure Federal Reserve loans under section 13(3); but on the other hand, the Fed was the legal judge of that.
- The Fed and the Treasury tried hard, right up to the last minute, to broker a “private sector solution” whereby some other large financial institution (Bank of America? Barclays?) would buy Lehman. Once push came to shove, they did not view Lehman as a good opportunity to teach a moral hazard lesson, even though Treasury Secretary Henry Paulson had suggested as much earlier.

All that said, if the Fed and the Treasury had realized how terrible things would get if Lehman were allowed to fail, it seems to me that the central bank could have labeled enough of Lehman's collateral as “good enough” to justify the necessary loans—much as it had done for Bear Stearns (using J.P. Morgan as a vehicle) just six months earlier.⁹ Indeed, I think a significant part of the stunning market reactions to the Lehman failure stemmed from the starkly different treatments accorded to Lehman (let it fail) versus Bear (save it).

After the Bear Stearns operation, markets presumed that many large financial institutions (FIs) were too big or too connected to fail. After Lehman Brothers failed, the rulebook went out the window, no FI looked safe

8. Within days of the Lehman disaster, the Treasury, which had claimed it had no money it could use legally to save Lehman, found \$50 billion in the Exchange Stabilization Fund to support the endangered money market mutual fund industry.

9. The Fed lost nothing on \$29 billion worth of Bear Stearns assets that J.P. Morgan viewed (in March 2008) as too risky to take on its own balance sheet. Might that have happened with the Lehman assets, too, once the crisis passed?

anymore, and the rout was on. It was a monumental error with catastrophic consequences. If the Treasury and the Fed were going to take a moral hazard stand somewhere, it should have been over Bear, not Lehman.

Once Lehman crashed and burned, and the far-reaching and frightening consequences started to become clear, the Fed's performance improved markedly and admirably. But the Fed did not win a lot of public accolades or support. As Barney Frank astutely observed, "No one has ever gotten reelected where the bumper sticker said, 'It would have been worse without me.' You probably can get tenure with that. But you can't win office."¹⁰

True, but the Fed's strong actions probably kept a terrible situation from mushrooming into an all-out catastrophe.¹¹ Like the Troubled Asset Relief Program (TARP), to which Ben Bernanke lent his personal and the Fed's institutional power and prestige, many of the Fed's emergency actions were bold, intelligent, and imaginative. When things started crashing all around him, there was no playbook sitting on Fed Chairman Ben Bernanke's bookshelf. The Fed (and the Treasury) had to improvise on the fly. I shudder to think about what might have happened had the Federal Reserve behaved in 2008–2009 as it did in 1930–1931. Fortunately, so did Bernanke.

After Lehman, the Fed intervened in unprecedented ways, first to save and then to resuscitate dying (or dead) markets for commercial paper (CP) and mortgage-backed securities (MBS). The CP rescue program resulted in a temporary bulge in the central bank's balance sheet, the acceptance of some (though not much) credit risk, and a tacit foray into credit allocation. It was a portent of things to come. The MBS purchase program, which is still in progress, led to a huge and long-lasting expansion of the Fed's balance sheet, the acceptance of even more credit risk, and a quite explicit effort to allocate more credit to mortgage finance. In each respect, the Fed stuck its neck out, and critics brayed that it was going astray. In each respect, in my view, the Fed deserves kudos for being right.

Bernanke also made an intellectual break with previous episodes of quantitative easing (QE), as practiced mainly in Japan. (He tried to change

10. Quoted in *Washington Post*, July 21, 2009. I found this quotation in Wilson (2012, 251). By the way, you *can* get tenure with that!

11. Blinder and Zandi (2010) estimated that without the many "financial policies," which included TARP, the unemployment rate would have risen nearly 3 percentage points more than it did.

the name, too—to “credit easing.” But “QE” stuck.) In Japan, the focus of QE was on the *liabilities* side of the Bank of Japan’s balance sheet. The central idea was to throw massive amounts of excess reserves into the banks on the hope that they would put some of them to work. As practiced by the Fed, however, the focus of QE was on the *assets* side of the central bank’s balance sheet—what the Fed bought. Bernanke emphasized imperfect substitutability and “portfolio balance” effects that would lower interest rates (even on assets the Fed was not buying), raise stock prices, and probably—though the Fed never emphasized this—lower the dollar exchange rate. Hence the Fed’s official term for QE: large-scale asset purchases (LSAPs).

Of course, these two approaches are more like two sides of the same coin than alternatives because balance sheets must always balance. Whenever the Bank of Japan does QE operations to boost bank reserves, it must also decide which assets to buy. Whenever the Fed does LSAPs, it simultaneously raises bank reserves *pari passu*, which is why I call it an *intellectual* break. But appraisals of Japanese-style QE naturally focus more on credit and money creation, whereas appraisals of American-style LSAPs naturally focus more on movements in interest rates and stock prices.

After the Fall

The outright panic ended in the spring of 2009. One of the main reasons was the highly successful “stress tests” on nineteen systemically important financial institutions (SIFIs)—not all of which were banks—that Secretary of the Treasury Tim Geithner had announced in February. The tests themselves were carried out by all the bank regulatory agencies working together, but the Fed was clearly in first chair.

We see these 2009 stress tests now as a smashing success—and instrumental to ending the crisis. But it is easy to forget that they were a riverboat gamble at the time.¹² Two opposite risks loomed large. If the stress tests were seen as too easy, markets might have viewed them as a whitewash, concluded that the problems with the big banks were far deeper than suspected—and panicked. If the stress tests had turned up a much greater need for bank capital than they did, markets might have deemed the announced capital needs impossible to meet—and panicked. The regulators managed to thread the needle with credible—and

12. Remember, e.g., that Europe’s first bank stress tests were a miserable failure.

amazingly transparent¹³—stress tests that estimated capital needs that, while not trivial, were manageable. After that, confidence in the banking system came back rapidly.

Once the stress test results were in, financial markets bounced back quickly and vigorously, but the economy did not. Several data revisions later, we see that annual GDP growth over the next two years (from the second quarter of 2009 to the second quarter of 2011) averaged just 2.25 percent. At the time of the Brookings-Hoover conference (October 2013), the unemployment rate, which peaked at 10 percent, was still 7.3 percent—and most knowledgeable observers thought the downward movement of the official unemployment rate *overstated* the improvement in the labor market. For example, the employment-to-population ratio barely budged.

The reasons for the sluggish recovery are many and varied—and a subject for another day. But they had induced the FOMC, by the time of the conference, to stick with its near-zero interest-rate policy for nearly five years; and the near-zero federal funds rate will probably last another two or more.¹⁴ In addition, the Fed has rolled out one QE policy after another, the latest (QE3) being an almost-equal blend of buying long Treasuries and buying agency MBS.

These unconventional monetary policies (UMPs) have been controversial since their inception—and still are. I give the FOMC mostly high marks for its UMPs. Others do not. Apart from the fact that “hawks” virtually always want tighter monetary policy than “doves” do, I find this controversy rather puzzling. After all, most UMPs are just continuations of conventional monetary policies into a world in which the federal funds rate can no longer be pushed down.

Think about QE in Treasuries, for example. Under normal conditions, when the Fed wants to give the economy a boost, it goes out into the marketplace and purchases Treasury securities, mostly T-bills. That’s called “open-market operations,” and we teach the basic idea in Economics 101. (I know because I teach Economics 101.) But QE is just another form of open-market operations. The two differences are that

13. Prior to the stress tests, the Fed and other bank regulators virtually never released information about the conditions of specific banks. That was considered highly confidential.

14. The Fed’s Survey of Economic Projections as of September 18, 2013, showed that only four of seventeen Federal Reserve governors and Reserve Bank presidents thought the funds rate would rise before the end of 2014; another twelve thought that would happen by the end of 2015.

(a) when open-market operations are conducted at the zero lower bound, the federal funds rate cannot fall any further, and that (b), partly for that reason, the Fed acquires longer-dated Treasury notes and bonds, rather than bills, to try to push down intermediate and long rates. Another quantitative-but-not-qualitative difference is that QE in Treasuries seems to have rather low bang for the buck. For that reason, the magnitudes of Federal Reserve purchases must be large.

QE in MBS raises some other issues, including the unveiled attempt to channel more credit into the housing sector. But is that really so different, in its effects, from conventional monetary policy? Under normal conditions, when the Fed buys T-bills and lowers interest rates to raise aggregate demand, the strongest expansionary effects are always felt in the housing market—and conversely when the Fed tightens. QE in MBS is designed to have precisely such a “biased” effect. But when buying MBS, the credit allocation is explicit and highly visible, whereas it is tacit and (to some extent) hidden under conventional monetary policy.

Has QE worked? Should it be continued, tapered down, or even eliminated? Opinions vary. The overwhelming weight of the empirical evidence seems to say that the various episodes of QE have pushed down interest rates, although the post-QE1 effects are far smaller than those from QE1—which, after all, rescued the moribund MBS market.¹⁵ Krishnamurthy and Vissing-Jorgenson (2013) even suggest, somewhat surprisingly, that the impacts on rates may not spread very far along the yield curve or the risk curve. Critics of QE don’t dispute these findings (much). Mainly, they argue that any such benefits must be weighed against the market-distorting and/or potentially inflationary (eventually!) effects.

Curiously, the undisputed fact that the economy is still weak is used by both proponents and opponents of continuing QE to bolster their arguments. The pro-QE camp argues that the economy still needs more support from monetary policy. The anti-QE side argues that the Fed has little to show for trillions of dollars of QE.

Are there other options? For more than three years, I have been urging the Fed to lower—probably into negative territory—the interest rate it pays on excess reserves (IOER). The idea is to blast some of the current mountain of excess reserves out of the banks and get these dollars

15. See, for example, Gagnon, Raskin, Remache, and Sack (2011); D’Amico and King (2013); Hamilton and Wu (2012); and Krishnamurthy and Vissing-Jorgenson (2011, 2012, 2013).

functioning, as they do in normal times, as “high-powered” money. Notice that, to the extent this effort works, cutting the IOER might actually enable the Fed to trim its balance sheet somewhat without, on net, withdrawing monetary stimulus.

Looking ahead

What are some questions and concerns about the future?

Most obviously, the Fed must eventually exit from most or all of its remaining UMPs—mainly, the near-zero interest-rate policy and the vast expansion of its balance sheet. Designing and implementing a strategy for doing so (an exit strategy) entails many tricky questions, such as when to exit (when to start and when to finish), how to exit (e.g., should the Fed let assets run off or sell them actively?), and the proper sequencing. Each of these issues has been discussed extensively, both by the Fed itself and by outside observers. Needless to say, the books will not be closed on UMPs until the Fed has exited—gracefully, I hope. Let me raise just two questions about the Fed’s exit strategy to date.

First, the FOMC’s announced sequencing seems destined to steepen the yield curve. Why? Because it begins with tapering back on QE3 purchases, then perhaps allowing some assets to run off, both of which will probably happen well before the FOMC begins to raise the federal funds rate. Thus, intermediate and long rates seem almost certain to rise while the short end of the yield curve is anchored near zero, thereby steepening the yield curve. It is far from obvious to me why the Fed wants to steepen the curve as opposed to, say, letting it drift upward in a more-or-less parallel manner. After all, the FOMC has been relying for five years now on *flattening* the yield curve as the best way to inject more stimulus into the economy. If the FOMC has reasons to steepen the curve as it exits, it should articulate them. I haven’t heard any.

Second, FOMC spokespersons from Bernanke on down have been trying to talk the market into the implausible proposition that the timing of tapering has no bearing on the timing of the eventual increases in the funds rate. Thus, for example, when the Fed surprised markets by seeming to advance the expected start date for tapering to September 2013,¹⁶ the central bank apparently expected that the “announcement” would *not* advance the market’s perceived start date for interest rate hikes. Unre-

16. Which, just prior to the conference, it decided not to do.

alistic thinking like that, I believe, was one major reason why the Fed was surprised at the market's strong reactions to its tapering "hints" in May–June 2013.

Why do I call this unrealistic? Because the decision to taper and the decision to raise interest rates depend on the same factors: the economy's growth prospects, especially for improvements in labor market conditions, and the continued quiescence of inflation. When one moves up or back in time, so does the other. Thus, unlike (apparently) many on the Fed, I think it was perfectly rational for the markets to shift the forward curve upward when Bernanke started talking about tapering. In my view, the Fed should banish from its thinking the implausible proposition that it can separate expectations of tapering from expectations of rate increases. It is much more likely that, as one moves up, so will the other.

A second set of issues pertains to what comes after the exit. In particular, should the Federal Reserve return to the *status quo ante*, or should it retain some aspects of its recent/current unconventional monetary policies?¹⁷ As one concrete and important example, consider the Fed's multi-pronged efforts (via QE and forward guidance) to flatten the yield curve.

Back in the old days of conventional monetary policy, many central banks had only one instrument of monetary control that they actually used: the overnight interbank lending rate (in the United States, the federal funds rate). That self-imposed limit created a kind of shell-game aspect to monetary policy because no important economic transactions take place at the federal funds rate. Rather, moving the funds rate was a way to *influence*, but not to *control*, the financial variables that really affect economic activity: the entire constellation of interest rates, stock prices, exchange rates, and the like. The slippage between, say, the funds rate and the ten-year Treasury rate was a major source of uncertainty for monetary policymakers. Indeed, I used to play a little guessing game when I was vice chairman of the Fed: when we moved the funds rate by X basis points, how much would the ten-year rate move? I was decent, but certainly not terrific, at this game.

I bring up this point because various sorts of UMPs, especially direct purchases of Treasury notes and bonds, can be viewed as ways to reduce the slippage between the funds rate and, say, the ten-year rate by purchasing ten-year bonds directly or by giving pointed and specific forward guidance. Is it so clear that the Fed and other central banks

17. I have written on this at greater length in Blinder et al. (2013).

should relinquish this ability as part of the return to normalcy? Or have we learned something useful that can make monetary policy more effective?

A third set of issues surrounds “too big to fail.” Title II of Dodd-Frank (Orderly Liquidation Authority) abolishes TBTF *de jure*, and the FDIC has recently published its single point of entry (SPOE) plan for doing so in practice.¹⁸ Many critics, however, remain skeptical, refusing to believe SPOE will work *de facto*. It will have to be used before we know for sure, and if many SIFIs are teetering on the brink at once in a systemic crisis (as in September-October 2008), it may be difficult to put it into effect.

A related point involves section 13(3) of the Federal Reserve Act—the emergency lending authority. To prevent the Fed from invoking 13(3) on behalf of a single troubled institution (e.g., saving AIG), Congress amended it to require that any special lending facility have “broad-based eligibility” rather than be tailored to suit a single firm (“no more bail-outs”). Some observers worry that this restriction will seriously weaken the Fed’s ability to contain future systemic crises. That’s possible, but I am less worried. It seems to me that, in a crisis, the Fed should have no trouble defining a *class* of eligible borrowers who need emergency loans. So the new section 13(3) should not be an operational constraint on the Fed’s ability to fight a systemic crisis.

Finally, I must at least mention the almost-unexplored continent: macroprudential policy. That ugly word connotes the uncharted territory *between* monetary policy and *micro*prudential policy—where traditional safety-and-soundness considerations meet macroeconomic concerns. Macroprudential policy is still in its infancy—even in those countries that are already (or are on the verge of) practicing it. In the United States, we are still clearly in the thinking stage, at the Fed and elsewhere.¹⁹ And it needs a lot of thinking.

The contrast with conventional *macroeconomic* monetary policy could hardly be more stark. When deploying conventional monetary policy, there is just one instrument—the overnight interest rate—and a lot of evidence (not all of it in agreement!) on how it works. When we venture into the realm of macroprudential policy, we encounter a long list of potential instruments (e.g., loan-to-value ratios, cyclically variable capital and/or liquidity requirements, etc.), but not much of a knowledge base

18. See FDIC and Bank of England (2012).

19. Principally, at the Treasury’s new Office of Financial Research.

on which to appraise their relative efficacies. So there is a lot of spadework for the Federal Reserve, the Treasury, and others to do.

Here's one example: what should a central bank do in the face of a (suspected) asset price bubble? An emerging point of view holds that the bank shouldn't raise the overnight interest rate to burst the bubble because that's a poorly targeted instrument and because it might also burst the economy. Instead, the argument goes, the central bank should use conventional supervisory and macroprudential instruments to lean against—and, in the limit, burst—the bubble. But which one or ones? I don't raise this as a rhetorical question. I don't think anyone knows the answer.

Which seems an appropriate place to end this essay.

References

- Andrews, Edmund L. 2004. "The Ever More Graspable, and Risky, American Dream." *New York Times*, June 24. <http://www.nytimes.com/2004/06/24/business/the-ever-more-graspable-and-risky-american-dream.html?pagewanted=all&src=pm>.
- Baker, Dean. 2002. "The Run-up in Home Prices: Is It Real or Is It Another Bubble?" CEPR Briefing Paper, Center for Economic and Policy Research, Washington, DC, August, http://www.cepr.net/documents/publications/housing_2002_08.pdf.
- Blinder, Alan S. 2013. *After the Music Stopped: The Financial Crisis, the Response, and the Work Ahead*. New York: Penguin Press.
- Blinder, Alan S., Thomas J. Jordan, Donald Kohn, and Frederic S. Mishkin. 2013. *Exit Strategy: Geneva Reports on the World Economy 15*. Geneva, Switzerland: International Center for Monetary and Banking Studies, September. London: Centre for Economic Policy Research.
- Blinder, Alan S., and Mark Zandi. 2010. "How the Great Recession Was Brought to an End." *Moody's Analytics*, July 27, <http://www.economy.com/mark-zandi/documents/End-of-Great-Recession.pdf>.
- D'Amico, Stefania, and Thomas B. King. 2013. "Flow and Stock Effects of Large-Scale Treasury Purchases: Evidence on the Importance of Local Supply." *Journal of Financial Economics* 108 (2) (May): 425–48.
- Federal Deposit Insurance Corporation and Bank of England. 2012. "Resolving Globally Active, Systemically Important, Financial Institutions." Joint White Paper, December 10.
- Financial Crisis Inquiry Commission. 2011. *The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and*

- Economic Crisis in the United States*. Washington, DC: US Government Printing Office.
- Gagnon, Joseph, Matthew Raskin, Julie Remache, and Brian Sack. 2011. "The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases." *International Journal of Central Banking* 7 (1) (March): 3–44.
- Hamilton, James D., and Jing Cynthia Wu. 2012. "The Effectiveness of Alternative Monetary Policy Tools in a Zero Lower Bound Environment." *Journal of Money, Credit, and Banking* 44, no. S1 (February): 3–46.
- Krishnamurthy, Arvind, and Annette Vissing-Jorgensen. 2011. "The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy." *Brookings Papers on Economic Activity* 42 (2) (Fall): 215–87.
- Krishnamurthy, Arvind, and Annette Vissing-Jorgensen. 2012. "The Aggregate Demand for Treasury Debt." *Journal of Political Economy* 120 (2) (April): 233–67.
- Krishnamurthy, Arvind, and Annette Vissing-Jorgensen. 2013. "The Ins and Outs of Large-scale Asset Purchases." Paper presented at Federal Reserve Bank of Kansas City, Jackson Hole Economic Policy Symposium: Global Dimensions of Unconventional Monetary Policy, August 22–24.
- Taylor, John B. 2009. *Getting Off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis*. Stanford, CA: Hoover Institution Press.
- Temkin, Kenneth, Jennifer E. H. Johnson, and Diane Levy. 2002. *Subprime Markets, the Role of GSEs, and Risk-Based Pricing*. US Department of Housing and Urban Development. Washington, DC: US Government Printing Office.
- Washington Post*. 2009. "Transcript. The House Holds a Hearing on the Semi-Annual Report of the Fed on Monetary Policy." *WP Politics*, July 21. <http://www.washingtonpost.com/wp-dyn/content/article/2009/07/21/AR2009072101505.html>.
- Wilson, Daniel J. 2012. "Fiscal Spending Jobs Multipliers: Evidence from the 2009 American Recovery and Reinvestment Act." *American Economic Journal: Economic Policy* 4 (3) (August): 251–82.