MONETARY POLICY IN THE POST-CRISIS WORLD: LESSONS LEARNED AND STRATEGIES FOR THE FUTURE

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INTRODUCTION

When I went to Washington at the start of the Obama administration, we moved on very short notice. So we just left our house in California empty. At some point we developed a leak in our drip irrigation system. Unfortunately, it wasn't visible on the surface to the neighbor who was checking on the house for us. We only discovered it when the water bill arrived, and we had a charge for $2500. I often think of how confused people will be in the future when they cut down the big redwood tree that got most of the leak. There will be one giant ring that stands out from all the others. Scientists will try to figure out what in heaven's name happened in the summer of 2009.

I predict that scholars in the future will face a similar mystery when they try to figure out why the entire economics profession was so unproductive this past summer. I suspect very few papers were written between June and September. The explanation, of course, is that we all spent the summer obsessing about who would be the next Fed chair. "Of course it won't be Larry Summers." "My God, it ***is*** Larry Summers." "Oh wait, I guess it's not Larry Summers." The drama in Washington caused the march of economic knowledge to grind to a halt as we spent our days gossiping and checking Google News for the latest updates. Now that President Obama has nominated Janet Yellen—an outstanding candidate—for the job, perhaps we can finally all get back to work.

This evening, I thought it would be helpful to step back from all of the discussion about ***who*** should be Fed chair, and talk instead about monetary policy more broadly. The last five years have been very difficult ones not just for the United States, but for many countries around the world. The collapse of Lehman Brothers and the resulting financial crisis set off a downward spiral that we and other advanced economies have still not recovered from. The Federal Reserve and other central banks had to take unprecedented actions to try to contain the panic. And they have continued to struggle to come up with innovative ways to spur lending and encourage growth.

With the benefit of a little distance, I thought it would be useful to talk about what we have learned about monetary policy from the experience of the financial crisis, and the subsequent recession and slow recovery. I then want to discuss some possible strategies for applying those lessons in the post-crisis world.

I. FINANCIAL CRISES CAN BE VERY PAINFUL

Lesson. Let me start with perhaps the simplest and most obvious lesson from the crisis: financial crises can be very painful. At some level, we always knew this. The pain caused by repeated banking panics in the late 1800s and early 1900s is the reason the Federal Reserve System was created in 1913. Milton Friedman and Anna Schwartz taught us that unchecked banking panics in the early 1930s caused a huge drop in the money supply, and were the primary cause of the Great Depression.[1] And Ben Bernanke, in his academic research before joining the Federal Reserve, showed that the panics of the 1930s had effects above and beyond those caused by the fall in the money supply.[2] Banking panics reduced spending and employment directly by disrupting the flow of credit.

At the same time, the impact of financial crises is not as predictable or inevitable as you might think. Carmen Reinhart and Kenneth Rogoff, in their influential book *This Time Is Different*, give the impression that financial panics are always devastating.[3] What is true is that, on average, output falls strongly after panics.

But Reinhart and Rogoff's own data and analysis suggest that the declines are far worse after some crises than others. Figure 1 shows the fall in real GDP per capita after various crises. The crises highlighted in red are the ones Reinhart and Rogoff label the "Big 5" modern crises. You can see that even among major crises, the outcomes vary greatly: output barely fell in three of the Big 5 episodes, but declined strongly in the other two.

What I think we have learned from the 2008 crisis is the same thing we learned from the 1930s: sometimes crises have truly devastating effects. How severe the consequences are depends on many factors, such as how widespread the crisis is and what other shocks are hitting the economy.

Part of what made 2008 so devastating was that a huge number of financial institutions got into trouble. The panic was worldwide, which meant that there were no strong countries to hold up the weaker ones. And, the panic was set off by a collapse of house prices, which destroyed wealth and wreaked havoc on household balance sheets. The weakening of balance sheets took a direct toll on consumer spending, above and beyond the effects through the reduction in credit.[4]

We also saw firsthand how hard it is to stop a widespread panic once it gets going. Friedman and Schwartz in their account of the 1930s make no attempt to hide their disdain for the Fed. In their view, the Depression was so terrible because the Fed was painfully inept, and did not step in when people started to line up outside banks' doors.

But, in the fall of 2008, the Fed was pulling out every tool it had to try to halt the panic. It pumped in unprecedented amounts of liquidity. It bailed out institutions like AIG. It persuaded the FDIC to guarantee all new bank debt. And, on top of this, we had deposit insurance, so most retail customers knew their deposits were safe. Even so, the crisis took months to get under control, and it disrupted the flow of credit tremendously.

Strategies. The fact that severe financial crises are hard to stop and can be devastating suggests it is crucial that we consider strategies to prevent future crises. One could devote an entire talk to discussing the needed improvements in regulatory policy and ways to strengthen the financial system. But frankly, that is not my area of expertise. However, before we dive into a discussion of monetary policy, I want to put up front the notion that financial stability is job number one of any central bank. Without that—nothing else matters. Central banks and other regulators need to be very aggressive in coming up with new ways to ensure financial institutions are sound even in the face of large shocks.

Let me give you one example of a regulatory reform I would like to see happen. Bank capital requirements specify how much of the money loaned out by a bank needs to come from shareholders rather than from depositors and other lenders. Higher capital requirements are a particularly effective and efficient regulatory reform. A high equity stake means that bank owners have a lot of skin in the game, so they are likely to behave more responsibly. It also means that there is a lot of invested capital to take losses if conditions deteriorate—so the bank remains solvent and taxpayers aren't forced to bail them out to prevent a devastating crisis. At the same time, such requirements don't involve micromanaging bank lending behavior, so they leave financial institutions free to respond to market signals. This ensures that the financial system remains dynamic.

The Fed and other regulators around the world are in the process of raising capital requirements, which were very low before the crisis. This is a good and important development. But it would be even better if the new requirements were higher than is currently being proposed, particularly for the biggest of the big banks—the so-called global systemically important financial institutions. These are the financial institutions that could bring down the world financial system if they got into trouble. I am persuaded by important new research which suggests that the cost of significantly higher capital requirements is likely small, while the benefits are potentially very large.[5]

One place where the financial stability and monetary policy concerns of a central bank clearly overlap is in the response to asset price bubbles. Back in the Greenspan era, central bankers made the case that it was not their job to be on the lookout for asset price bubbles and try to stop them. That was just too hard and too imprecise a mandate. Instead, monetary policy's job would be to mop up after a crisis.

The fact that the popping of an asset price bubble can often precipitate a crisis, and that crises have proved much harder to clean up after than we thought, makes this position no longer tenable. As hard as it is to spot a bubble in real time, monetary policymakers need to try, and to take steps to slow it down. This doesn't mean they should fixate on bubbles and fear them lurking around every corner. But we now know that thinking we can just ignore them is a very bad strategy.

II. THE ZERO LOWER BOUND ON INTEREST RATES IS A BIGGER CONSTRAINT THAN WE THOUGHT

Lesson. One unique feature of the recent episode was obviously the financial crisis. Another is the fact that the interest rate the Fed targets, the federal funds rate,

has been close to zero for almost five years. Confronted with the financial crisis and an economy plummeting right in front of its eyes, the Fed brought the funds rate down from 5¼ percent to zero in less than a year. Then we hit what economists refer to as the zero lower bound. Because people always have the option of holding cash, which pays a zero rate of return, nominal interest rates cannot go below zero. This meant that once the Fed brought the funds rate to zero, it couldn't go any further.

Now, even before the crisis, economists and policymakers understood that hitting the zero lower bound was very consequential. After all, we had watched Japan, which had a financial crisis in the early 1990s, struggle with the zero lower bound for years. Their policy interest rate has been virtually zero since 1996. But there was a certain confidence—some would say hubris— among American monetary policy experts that we could work around the zero lower bound constraint. Back in 2000, Ben Bernanke wrote a scathing critique of the Bank of Japan, and its claim there was little it could do to help the economy once interest rates were at zero.[6]

However, after facing the zero lower bound ourselves, such workarounds do not seem quite so straightforward. Central banks around the world—the Bank of England, the European Central Bank, the Fed—have tried various measures with at best partial success. For example, the Fed has had numerous rounds of quantitative easing—where they bought large quantities of unusual assets, such as mortgage-backed securities and long-term government debt—to try to push down any interest rates that were not already zero.

Figure 2 shows the asset side of the Fed's balance sheet. Quantitative easing, together with the emergency actions taken early in the crisis, have caused the Fed's balance sheet to mushroom. Their asset holdings are now about four times what they

were before the crisis. Quantitative easing has surely helped some, but it has not proven the easy fix some might have hoped or expected. Indeed, given Bernanke's own troubles spurring recovery at the zero lower bound, some economists have suggested that the chairman owes the Bank of Japan an apology for mocking them so back in 2000.

Strategies. If the zero lower bound is a bigger constraint than we previously thought, what does this suggest about possible strategies for the future? Perhaps the most straightforward is to reduce the need to drop interest rates greatly by minimizing the probability of big contractionary shocks. This just is another way of repeating my plea for greater concern about financial stability. If we can make the financial system stronger, the chances of needing to lower the funds rate and other policy rates around the world more than 3 or 4 percentage points is greatly reduced.

A much more controversial proposal is to raise the Fed's and other central banks' target for inflation somewhat. At some level, the problem of the zero lower bound is a consequence of our success in fighting inflation. Any nominal interest rate reflects two components: the real cost of borrowing and expected inflation. Lenders want to make sure that their rate of return accounts for the fact that prices tend to rise over time. Figure 3 shows the federal funds rate since 1980. The funds rate even before the crisis was much lower than, say, in the 1980s. The main reason for this is that expected inflation has declined substantially over time. Monetary policy for the last two decades has done an excellent job of keeping inflation low, and people have built that into their expectations.

Some economists, and even some Fed officials, have suggested that raising the Fed's long-run target for inflation from its current value of about 2 percent to 3 or 4 percent might be helpful.[7] If the Fed were successful in hitting that higher target, it

would be incorporated into inflation expectations. This would make nominal rates, like the funds rate, higher by a point or two in normal times—which would mean that the Fed would have a little more room to drop interest rates when the economy needed help.

I am somewhat sympathetic to this argument. But I worry that it solves one problem by creating another. While slightly higher inflation would not be a major problem, it would be somewhat disruptive. People clearly prefer low inflation, and higher inflation makes planning for the future harder. So, I would pursue other ways around the zero lower bound, before I resorted to this one.

The most obvious way around the problem caused by the zero lower bound is to use the other main tool in the government's arsenal to deal with recessions—that is, fiscal policy. If we cannot spur spending and recovery by lowering interest rates, because they are already at zero, we can do it by temporarily lowering taxes and increasing government spending. However, as someone who played a role in crafting the Recovery Act, the fiscal stimulus passed in February 2009, I am acutely aware of how hard it is to get adequate fiscal stimulus through Congress and out into the economy in a timely fashion—even in the midst of a terrible economic crisis.

But fiscal stimulus does work. Study after study has been done on the Recovery Act and the impacts of fiscal stimulus more generally. Though the studies find that some fiscal actions are more effective than others, almost all conclude that tax cuts and spending increases do help spur the economy in the near term.[8]

If the fact that normal interest rates are now lower means that we will be hitting the zero lower bound more frequently, we may want to consider ways to use fiscal stimulus faster and more effectively. You may be surprised to hear that I am a supporter of some form of balanced budget amendment. The fiscal stalemate and irresponsibility

in Washington simply has to stop if we are going to remain an economic superpower.

But within a framework of fiscal responsibility, such as a balanced budget amendment, it would be possible and, I think, sensible to build in more fiscal fire-fighting power. We could set up a system that automatically cuts tax rates and increases unemployment benefits and food stamps when the economy weakens. This would get us fiscal stimulus quickly when the economy needs it. To balance out this automatic fiscal expansion, we could require automatic debt reduction in particularly good years. Such a new fiscal policy framework could get us the macroeconomic stability we want, with fiscal responsibility, despite the existence of the zero lower bound.

III. EXPECTATIONS MANAGEMENT IS ESSENTIAL, BUT DIFFICULT

Lesson. Expectations management is always an important component of monetary policy, but it is particularly relevant at the zero lower bound. There are several ways that expectations management by the central bank could matter. One involves people's expectations of the federal funds rate in the future.[9] Long-term interest rates are a key factor affecting whether firms want to invest or households want to buy homes. Basic economic theory suggests that a key determinant of long-term interest rates is people's expectations of what short-term interest rates will be in the future. As a result, one way to lower long-term interest rates like mortgage rates or corporate borrowing rates is for the Fed to convince people that it will keep the federal funds rate near zero for a number of years.

Another way expectations can be important involves beliefs about future inflation.[10] The zero lower bound refers to the fact that ***nominal*** interest rates cannot fall below zero. But the ***real*** interest rate—which is the nominal interest rate minus

expected inflation—can go negative. If the nominal rate is zero and expected inflation is 2 percent, the real rate of return one is getting or paying is minus 2 percent. One of the ways a central bank can stimulate an economy at the zero lower bound is to raise expected inflation some, and so push down real rates.

A final way beliefs may be important involves expectations of growth.[11] People's expectations about the future health of the economy have a powerful impact on their behavior today. A firm that expects growth to pick up is far more likely to invest and take on additional workers than one that is pessimistic about the future. Likewise, consumers who expect to have a job next year are far more likely to buy a new car or remodel their kitchen than those who are worried about the future. If a central bank through its statements and actions can cause expectations of stronger growth, that can be a powerful tonic for the economy.

Though economists and monetary policymakers have come to realize how crucial expectations management is, particularly at the zero lower bound, they have also learned firsthand how difficult it is. We have no better indication of the difficulties involved in expectations management than the turmoil the Fed caused this summer with its talk of "tapering." Back in June, Chairman Bernanke suggested that the Fed would start cutting back on its purchases of long-term Treasuries and mortgage-backed securities before the end of the year. He was not intending to signal any big change in the overall thrust of monetary policy. But markets reacted sharply. Expectations about when the Fed would start raising the funds rate moved closer by several months. And, as Figure 4 shows, long-term interest rates jumped more than a percentage point over the weeks following the chairman's statement. Markets reversed some of that rise when

the Fed did not actually decide to cut back on asset purchases at their September meeting. But overall, long-term rates have stayed elevated.

The *Financial Times* did a wonderful spoof on the Fed's troubles with expectations management a few weeks ago. It was titled "Forward Guidance and Home Economics."[12] Here is a choice bit:

> From: Ben Bernanke, US Fed
> Subject: Forward guidance to Anna Bernanke
>
> I will be home for dinner earlier than expected for the foreseeable future and nothing that happens between now and then will stop me being home early. ... I cannot foresee when the foreseeable future will end, but it won't be any time soon—as far as I can foresee.
>
> I suppose I should say a word about last week, where I agree there was a breakdown in communications .... Having advised you I might start coming home a little later than expected, I came home at my now usual early time to find my dinner was not ready. I acknowledge I may have given the impression I was definitely going to be late, and that I may have relayed a similar view to my staff, secretary, children and every Fed-watcher I briefed in the months leading up to the dinner. In fact, as it turned out, I'd have been even earlier than usual but Janet Yellen kept me back asking about the furniture in my office.

***Strategies*.** Given that expectations management is so important, particularly at the zero lower bound, but apparently so hard to use—what is a monetary policymaker to do? For an answer, I think the best place to look is back in history. The most successful attempt to stimulate an economy at the zero lower bound with monetary policy occurred in the United States in the 1930s.

People tend to think that Franklin Roosevelt's most dramatic actions involved fiscal policy and the New Deal. But, his monetary actions were even more dramatic and more important.[13] Roosevelt staged a regime shift—by which I mean he had a very dramatic change in policy.[14] A month after his inauguration, he took the United States off the gold standard, which had been the basis for our monetary operations since the

late 1800s. Then the Treasury, not the Fed, used the revalued gold stock and the gold that flowed in as means to increase the U.S. money supply by about 10 percent per year.

This regime shift had a powerful effect on expectations. Figure 5 shows stock prices, which can tell us about expectations of future growth, and a measure of expected inflation. In each panel, I have drawn in a line at March 1933, just before the dramatic change in policy. Stock prices surged instantly, suggesting that expectations of future growth improved dramatically. And price expectations also switched radically. These estimates were derived by James Hamilton, an economist at the University of California, San Diego, who backed out estimates of inflation expectations from commodity futures prices in the early 1930s.[15] Hamilton finds that people went from expecting deflation of close to 10 percent a year early in 1933 to expecting ***in***flation of 3 percent just a few months later.

This rise in expected inflation implies a dramatic fall in real interest rates, since nominal rates remained at zero the whole time. Figure 6 shows an estimate of the real rate derived from a different statistical procedure.[16] It too suggests that real rates fell tremendously.

And the change in expectations and real interest rates had a profound impact on behavior soon after. Firms started to invest and hire again. Consumers started to spend. Figure 7 shows truck sales in the early 1930s. One of the first things that took off following Roosevelt's regime shift was car and truck sales—as farmers and consumers decided that the future was bright enough that they should take the leap.

The bottom line from this episode is that for policymakers to really move the dial on expectations and push them firmly in the direction they want them to go—it takes a regime shift. Smaller, more nuanced moves are easily missed or misinterpreted by

people in the economy.

This is a lesson that the modern Bank of Japan seems to be trying to follow. After two decades of low growth and almost fifteen years of deflation, Prime Minister Shinzō Abe staged something of a regime shift of his own. On the monetary side, he replaced both the governor and the two deputy governors of the Bank of Japan. He put in place people committed to ending deflation. Besides setting an ambitious target for inflation, they took actions to back up the new goals. For example, they are doing quantitative easing on a scale that makes ours look timid. Also, the government has had a pretty clear policy of talking down the yen, which would make Japanese goods more competitive and so help strengthen their economy through higher exports.

So far, the impact of the Japanese regime shift looks promising. The yen has fallen substantially—it is down about 20 percent since last December. As Figure 8 shows, inflation is actually in positive territory finally. And real GDP growth has clocked in at an annual rate of more than 4 percent for the past two quarters. Only time will tell if the gains are sustained and truly substantial. But I believe Japan has taken an important step in the right direction.

Suppose the Federal Reserve wanted to make a bold change in policy today that would really change expectations and strengthen the recovery. What could it do?

Back in 2011, a number of economists, including me, argued that the Federal Reserve ought to adopt a new operating procedure for monetary policy: a target for the path of nominal GDP.[17] A nominal GDP target is just a different and more concrete way of specifying the Fed's dual mandate. The Fed is supposed to care about both inflation and real growth. Nominal GDP, which is the current value of everything we produce, is just the product of both those things—price changes and real growth.

Nominal GDP is shown by the solid blue line in Figure 9. To set a target path for nominal GDP, the Fed would start in some normal year, such as 2007. Then it would specify that nominal GDP should have grown at some constant, reasonable pace. This is shown by the red line in the graph. As you can see, we are currently very far below this target path

Switching to this new target would have some important benefits. In the near term, it would be a regime shift. It would unquestionably shake up expectations. Since we are currently very far below a nominal GDP path based on normal growth and inflation from before the crisis, it would likely raise expectations of growth, and so help spur faster recovery. But one of the best things about a nominal GDP target is that it is also a good policy for the long run. It says that once nominal GDP is back to the pre-crisis path, inflation should be at the Fed's target of 2 percent and real growth should be at its normal, sustainable level.

Now, a nominal GDP target is just one way a central bank could try to improve its expectations management. But my reading of history is that such a bold change is more likely to move expectations in the desired direction than the largely incremental changes the Fed has been trying to use so far.

IV. MONETARY POLICY CAN AND SHOULD HELP EASE THE PAIN OF DEFICIT REDUCTION

Lesson. As you undoubtedly know, many countries have large budget deficits and large and rising burdens of government debt. This is most obvious in parts of Europe, such as Greece, Spain, and Portugal, where the budget problems have led to fiscal crises and high borrowing costs. But it is also true in the United States, Japan,

and other advanced economies.

Countries absolutely have to deal with these budget problems. Some, like Greece, need to do it immediately, because investors have lost confidence in their ability to pay their debts, and so it is hard for them to borrow. Others, like the United States, have no trouble borrowing at low rates, and can bring down their deficits more gradually. But whatever the timing, the only way to truly solve these budget problems is that time-honored combination of tax increases and spending cuts.

Unfortunately, as necessary as deficit reduction is, a key fact is that it is painful. No matter how much some politicians and even some economists want to believe that deficit reduction won't hurt growth, the evidence is very strong that in the short run it raises unemployment.[18] We certainly see this in Europe. Countries like Spain, Portugal, Ireland, and Greece have undertaken aggressive deficit reduction measures. And as Figure 10 shows, their unemployment rates have risen substantially—in some cases to over 20%. You can also see that Germany, which for all its talk of austerity has done very little deficit reduction, has an enviable unemployment rate of just over 5%. Of course, the amount of deficit reduction is not the sole determinant of unemployment in any of these countries—but it is an important one.

An essential lesson, though, is that monetary expansion can help ease the pain of deficit reduction. We have a good example of this from well before the recent crisis—way back in the early 1990s. When President Clinton decided to raise taxes to lower the budget deficit, he went out of his way to get Alan Greenspan, the Federal Reserve chairman at the time, to help counteract the possible negative effects on the economy. As Figure 11 shows, when Clinton addressed Congress in February 1993 to announce his deficit reduction plans, the Fed chairman was invited to sit next to the first lady in her

box.[19]

Monetary policymakers pretty clearly cooperated. Figure 12 shows estimates David Romer and I constructed of what would have happened to the detrended real federal funds rate if the Fed had been following its usual behavior (the dashed line), and the actual federal funds rate (the solid line). What you see is that the Fed kept the real funds rate a fair amount lower than usual for the year following Clinton's tax increase.[20] And, it worked: in part because of the help from monetary policy, unemployment actually fell following during this episode.

The experience of the United Kingdom in the past few years is a more recent example of how monetary policy can help ease the pain of deficit reduction. Back in 2010, the newly elected Conservative government embarked on a pretty extreme deficit reduction plan. As it became clear that the rapid deficit reduction was hurting the recovery, the Bank of England gradually became more aggressive in trying to offset the effects. In addition to quantitative easing, in 2012 the Bank put in place an innovative program to try to spur lending directly. The so-called "funding for lending scheme" gives banks access to cheap funds if they make more loans to households and small businesses. The jury is still out on just how effective this program has been.[21] But it has clearly helped somewhat in offsetting the pain caused by the austerity.

***Strategies*.** What does this lesson from the crisis and before that monetary policy can ease the pain of deficit reduction tell us about U.S. monetary policy today? One is that it may be premature for the Fed to be talking about tapering or otherwise dialing back monetary stimulus.

Something that is easy to miss in all of the uproar in Washington over the deficit and the debt ceiling is that the United States has already had a lot of fiscal contraction.

Figure 13 shows the federal deficit as a share of GDP. What you see is that the deficit has fallen from about 7% of GDP at the end of 2012 to 4% of GDP in the second quarter of 2013. That is a lot of deficit reduction in a very short amount of time. Now some of that is due to faster growth, which increases tax revenues. But most of it is due to policy: we had a substantial tax increase at the start of the year, and the sequester has cut about $100 billion off government spending this year. All told, the Congressional Budget Office estimates that this rapid deficit reduction has shaved about 1½ percentage points off GDP growth for the year.[22]

In that situation, the Fed should be thinking about what more it can do to counteract the impact of fiscal contraction—not how they can do less. If monetary policymakers don't think continued asset purchases are effective or desirable, they should be thinking about what other tools they could be using to help the economy. For example, they could strengthen their guidance on the federal funds rate—and reassure people that they will keep rates low for a long time yet. Or, they could do something bold, like adopt a nominal GDP target.

In addition to being more aggressive in counteracting deficit reduction, the Fed might want to also have a frank talk with fiscal policymakers. The mess we have just been through with the government shutdown and threats about not raising the debt ceiling has unquestionably made the Fed's job harder. Most analysts believe that the shutdown alone has shaved almost another ½ a percentage point off GDP growth for the last quarter of the year.[23] And if we take into account what has happened to stock prices and consumer confidence, the effect could well be larger. So Fed members should start begging Congress and the President not to repeat this drama in January—when the current agreement runs out.

While they are talking, monetary policymakers could also suggest that it would be a smarter strategy to fight less about the near-term deficit and concentrate instead on the long-run drivers of government spending. As I mentioned, we have already made a lot of progress on reducing the deficit over the next few years. The much bigger problem is that spending on Social Security, Medicare, and Medicaid is predicted to grow substantially over the next few decades—as the baby-boom generation retires and health care costs continue to rise. If we could trim the projected growth of this spending on entitlement programs, that would pay huge dividends for the budget over the long haul—but it would be far less damaging to the economy today. Which would mean the Fed wouldn't need to be working so hard just to hold the economy in place.

CONCLUSION

In my talk today, I have tried to point out what I think we have learned about monetary policy from the crisis, and to suggest some ways that policy might evolve in light of those lessons. Let me close with a final, more general lesson for monetary policy from history. That lesson is: Don't fight the last war. Just as generals sometimes go very wrong by focusing too strongly on not repeating past mistakes, so do monetary policymakers.

My colleague Brad DeLong has argued that one reason the Fed allowed inflation to develop in the 1960s and 70s is that policymakers were still too focused on not repeating the Great Depression.[24] They were so concerned about keeping unemployment low that they didn't do enough to stop inflation.

But then monetary policymakers in 2009 and 2010 were so worried about not repeating the inflation of the 1970s, that they almost repeated the 1930s. The current

generation of policymakers came of age when inflation was the greatest problem. Though central bankers throughout the world took dramatic action in 2008 to stop the financial panic, by the summer of 2009, they were ready to be done.

I remember vividly being at a meeting of central bankers at the Jackson Hole Symposium in September 2009. All of the talk was: "We have stopped the crisis. Now what we need to do is go back to prudent monetary and fiscal policy, and to worrying about inflation." Yet unemployment was still rising—it would hit 10% in October 0f 2009. Every inch of my body wanted to scream to the monetary policymakers at the symposium: "Oh no, you are ***not*** done!" Monetary policymakers, unfortunately, did take a break from aggressive action in 2010 and 2011. And this likely slowed the economy's return to normal.

Today, I worry that guilt over letting asset prices reach the stratosphere in 2006 and 2007 has made some policymakers irrationally afraid of bubbles. As a result, they focus on the slim chance that another bubble may be brewing, rather than on the problems we know we face—like slow recovery, falling inflation, and hesitancy on the part of firms to borrow and invest.

So, how do we avoid the natural tendency to fight the last war? One way to do better is to learn from all of history, not just the most recent past. Taking the long view is the surest way to prevent short-term mistakes.

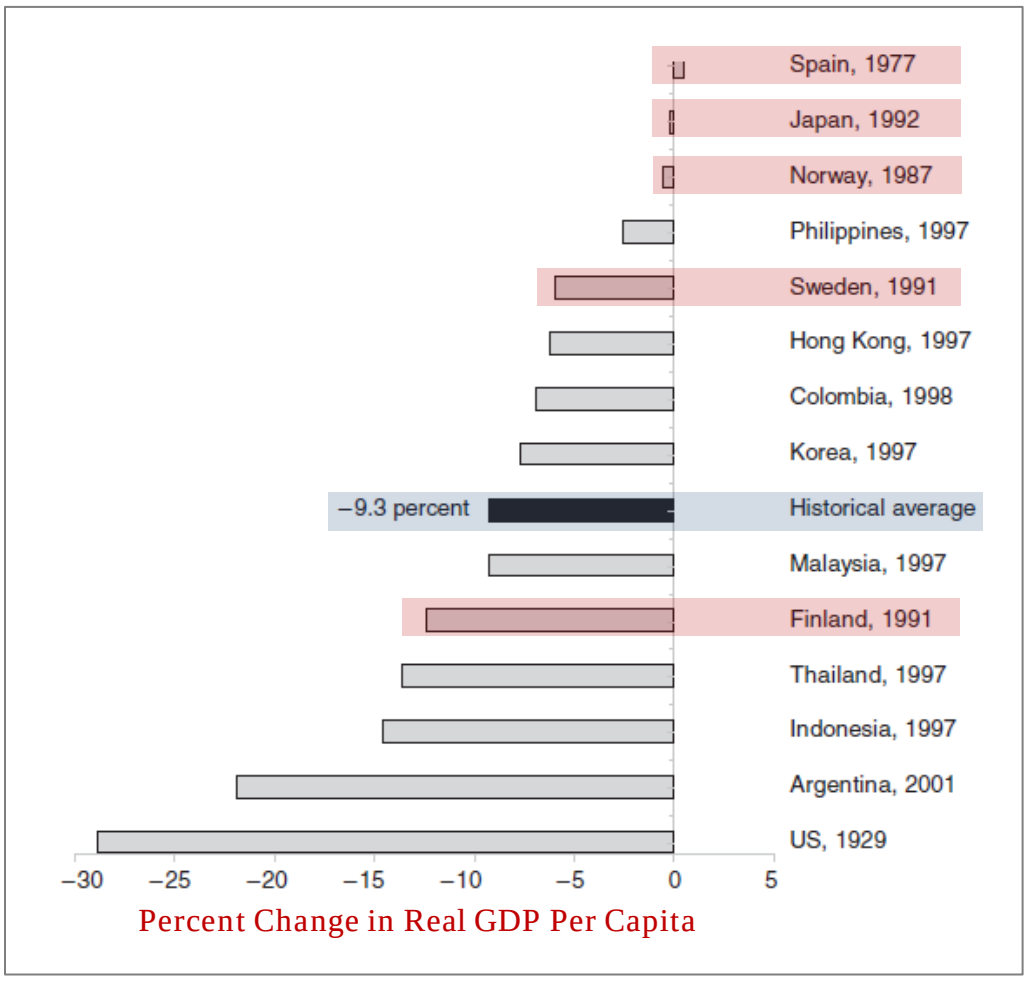
We also need to embrace evidence-based monetary policymaking. Fed officials and the economists who advise them should always question their views and prescriptions. Central banks, think tanks, and universities should continue to invest in policy-relevant research. And when the evidence clearly points in a new direction, policymakers need to have the nerve to follow it.

Finally, monetary policymakers may need to widen their circle of experience. I mentioned the Jackson Hole Symposium a minute ago. It is just one of a large number of such gatherings where central bankers get together and schmooze. Now I know that much good sharing of information and experience happens at these meetings. But I also fear that the endless stream of central bank get-togethers are a potential source of groupthink and us-versus-them mentality.[25]

I wonder if central bankers might be better served by spending a couple of weeks each August fanned out across the country—meeting workers, students, financial experts, and business people. That concentrated dose of reality might be just the thing to keep monetary policy fighting today's reality, not yesterday's phantoms.

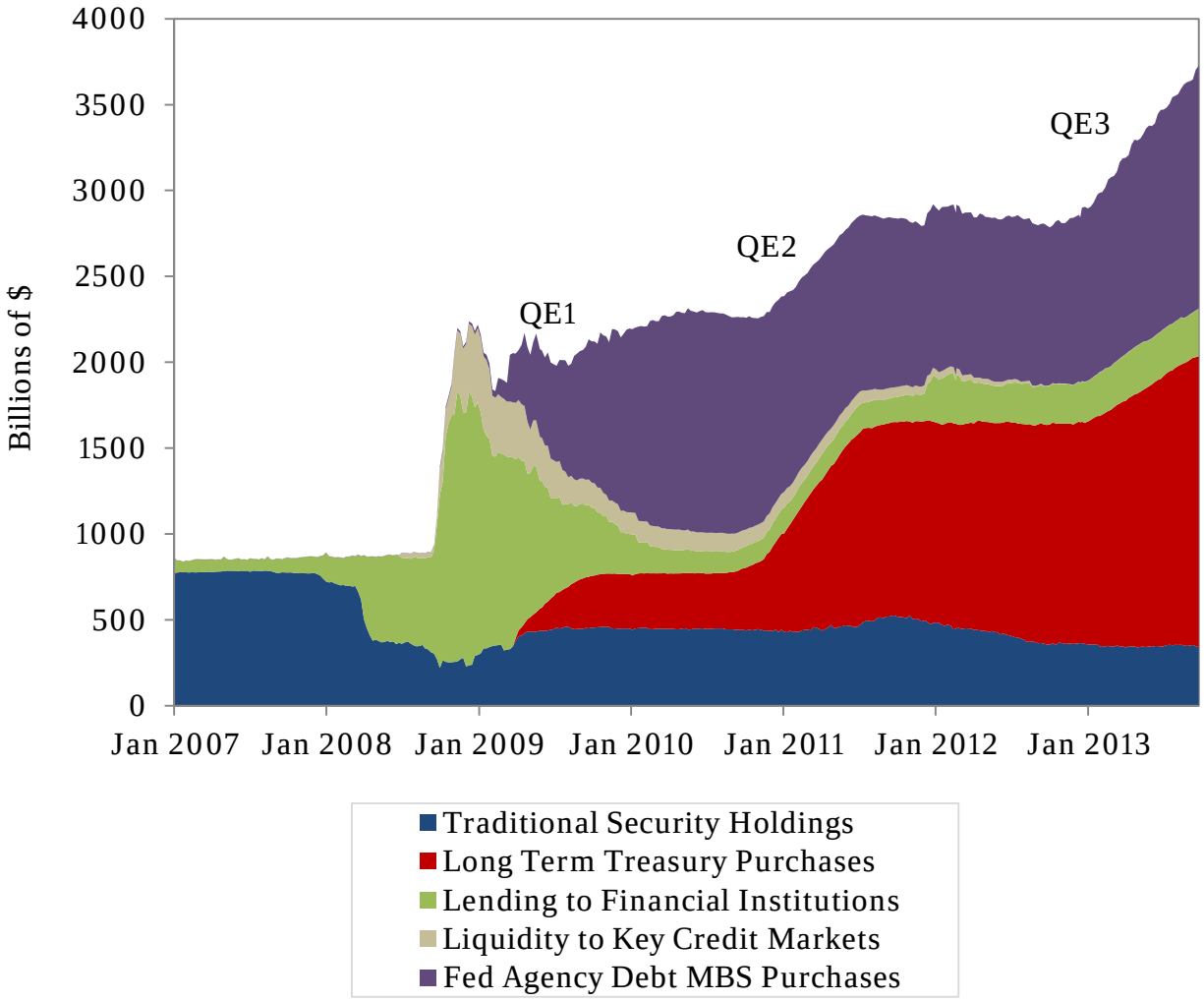
The bottom line is that monetary policy is a lot harder in the post-crisis world. We have learned a lot from the past five years, but there is still much we do not know. Policymakers, including the new Federal Reserve chair, are going to need flexible minds, good research, and the wisdom of ordinary Americans if they are going to meet the challenges that lie ahead.

Figure 1
The Aftermath of Financial Crises



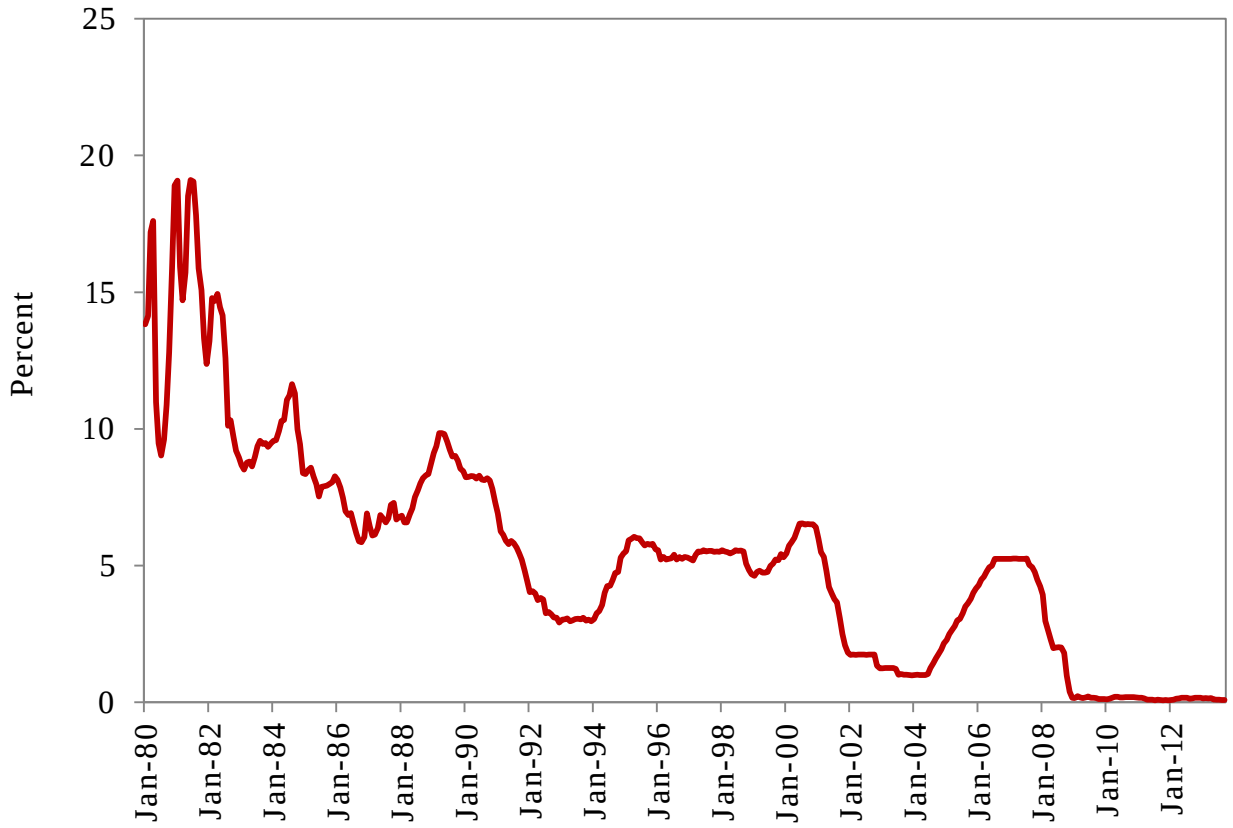
Source: Reinhart and Rogoff, 2009b, p. 470.

Figure 2
Federal Reserve Asset Holdings



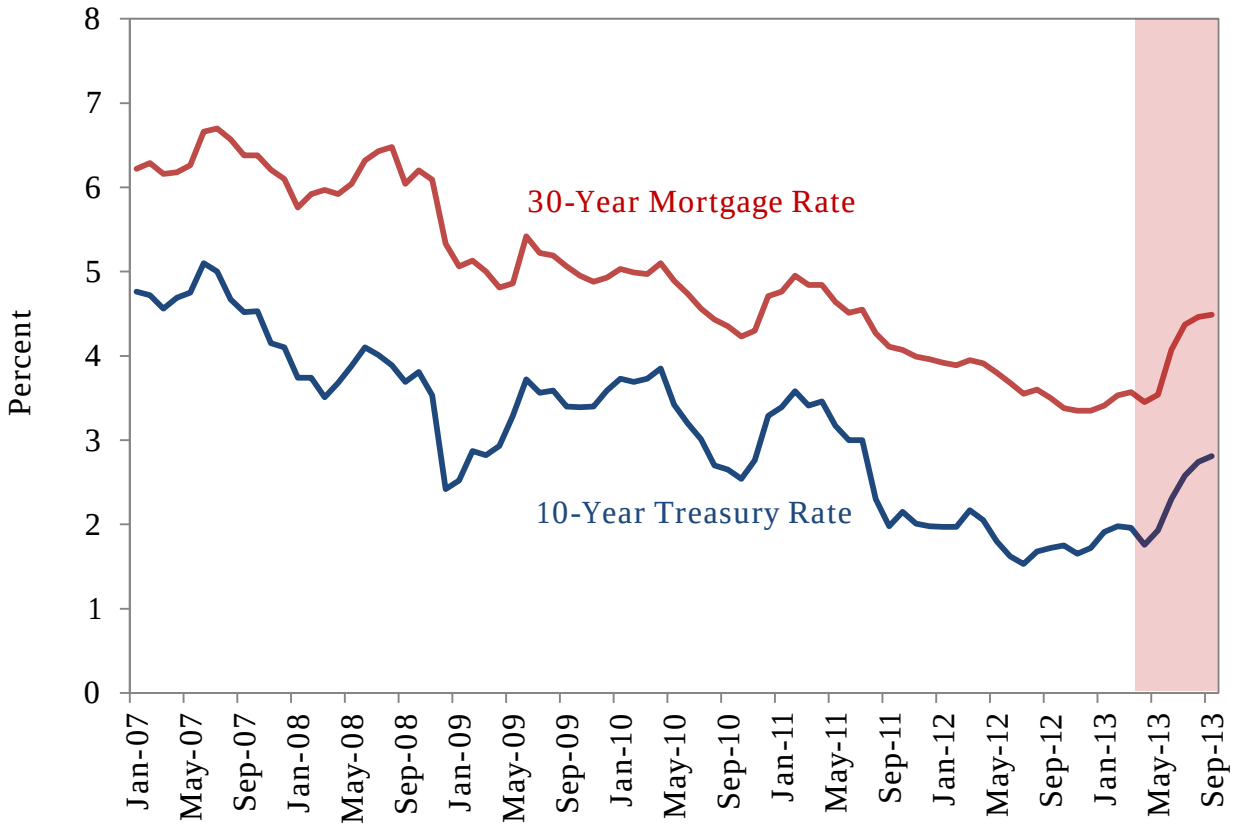
Source: Federal Reserve Bank of Cleveland.

Figure 3
Federal Funds Rate



Source: Board of Governors of the Federal Reserve System.

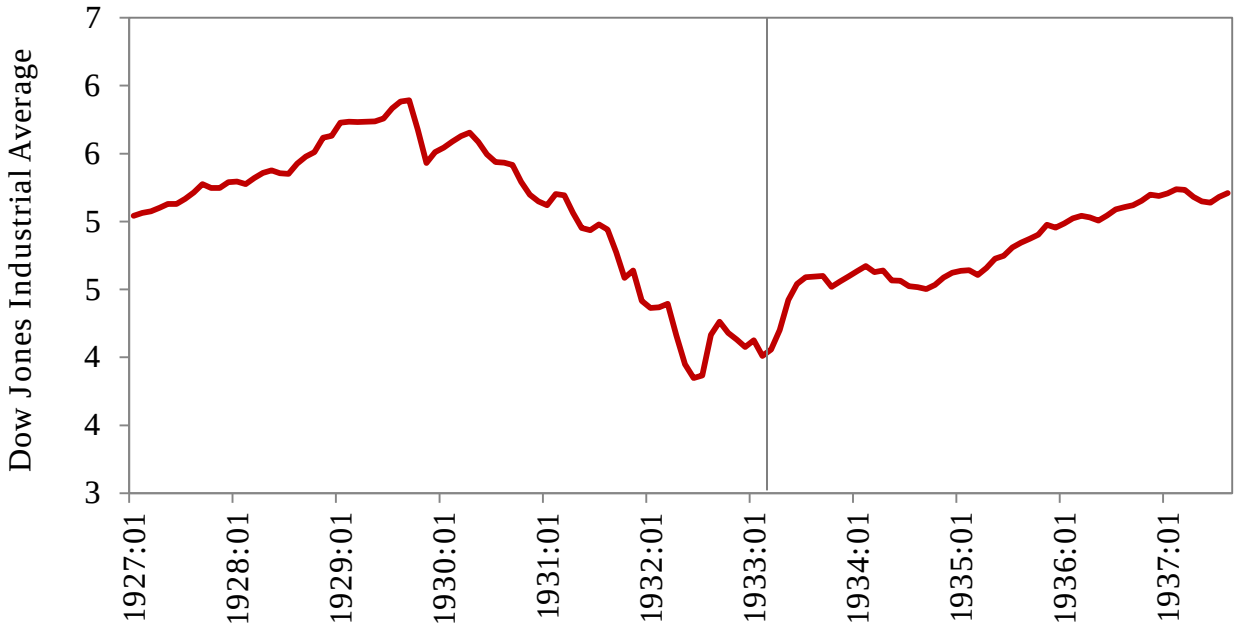
Figure 4
Long-Term Interest Rates and Talk of "Tapering"



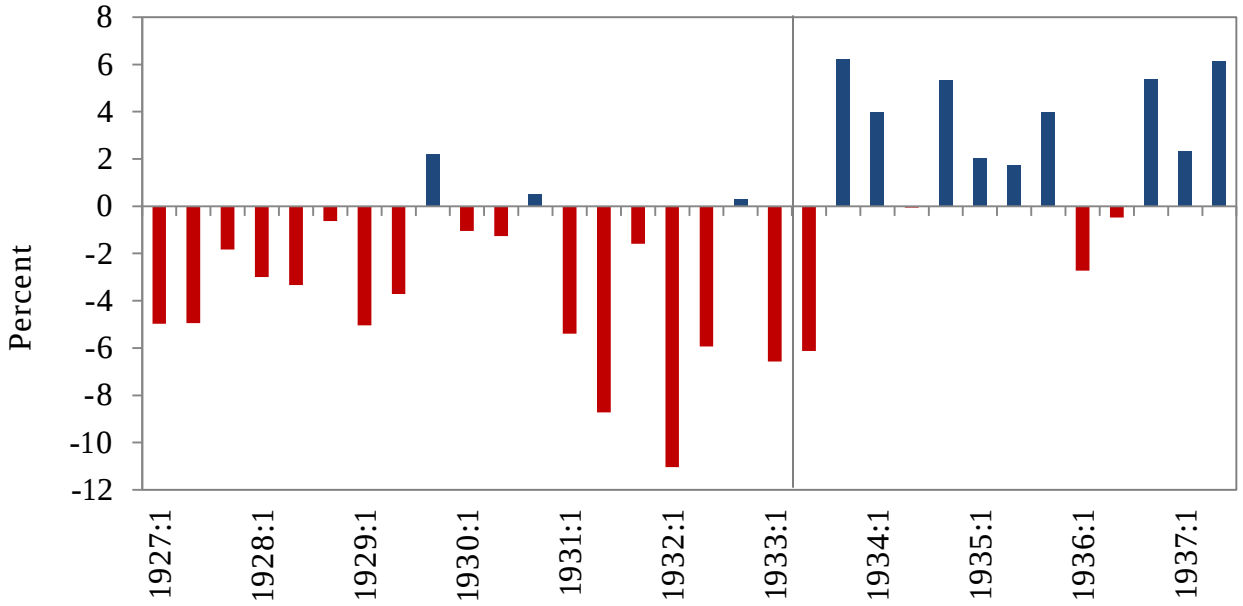
Source: Board of Governors of the Federal Reserve System.

Figure 5
Change in Expectations in 1933

a. Stock Prices

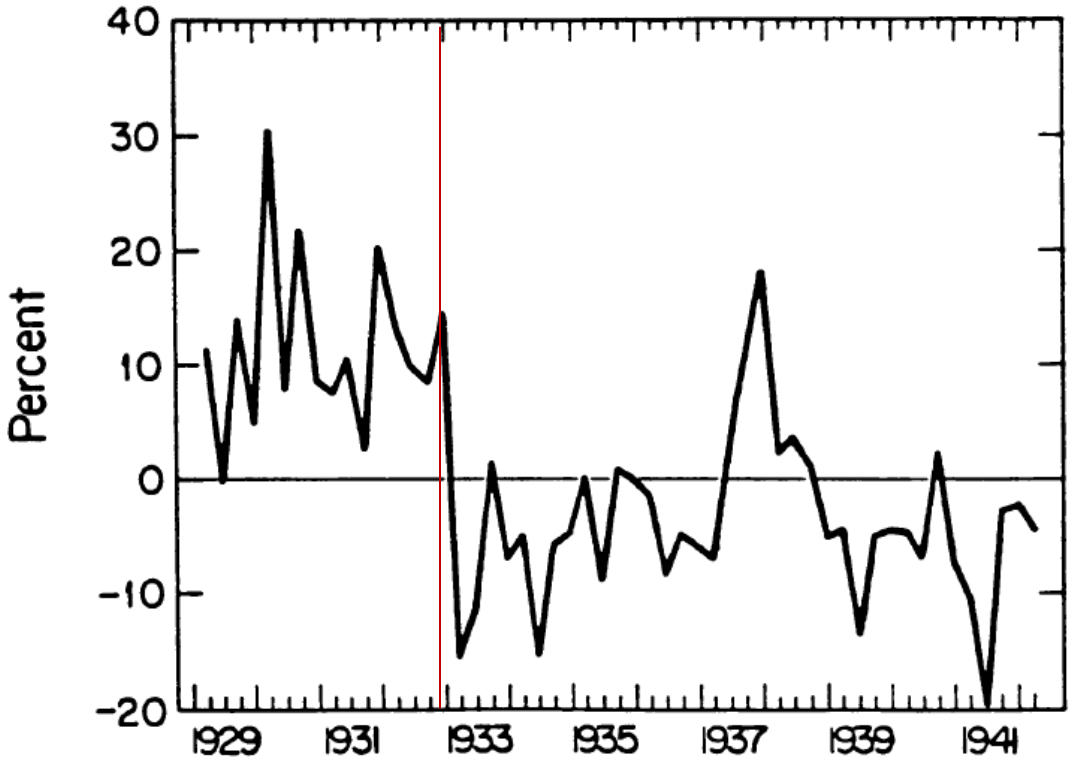


b. Expected Inflation



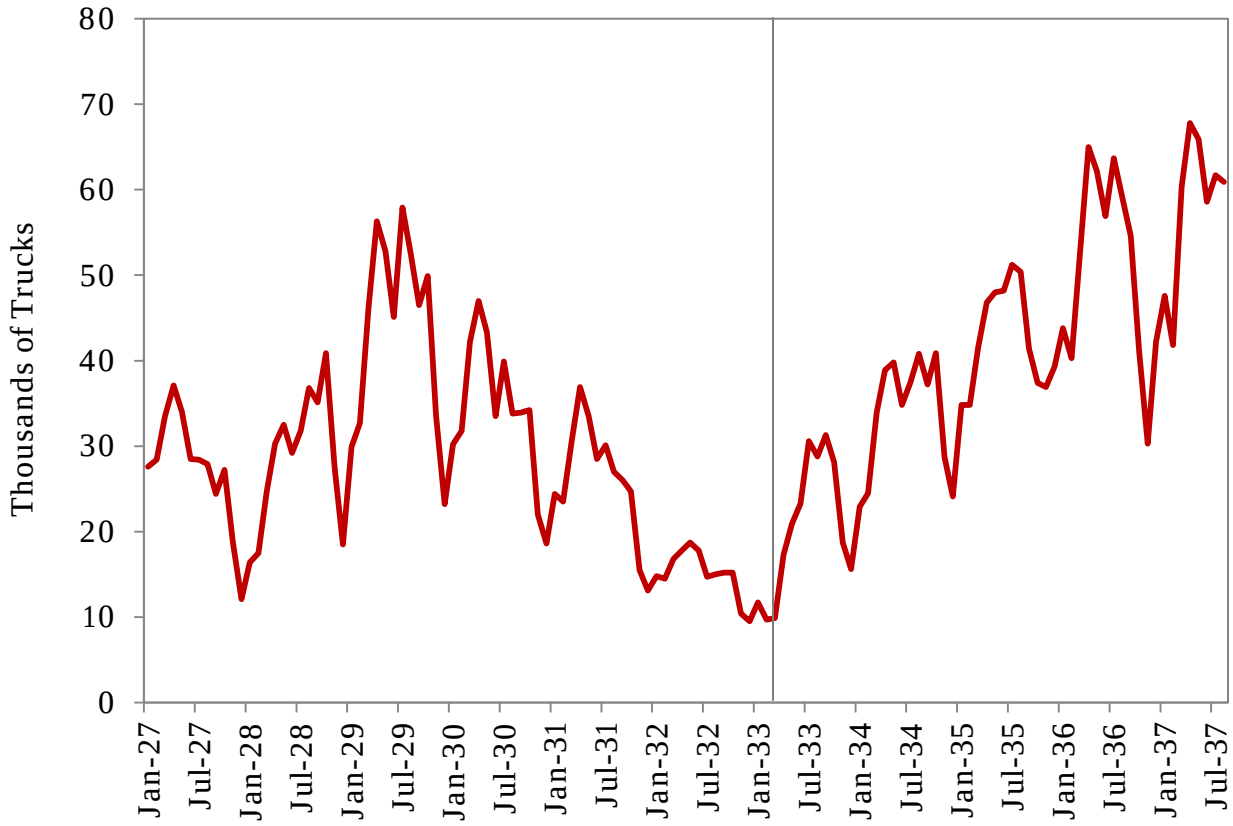
Sources: Federal Reserve Bank of St. Louis, FRED Economic Data; Hamilton, 1992, p. 171.

Figure 6
Estimated Real Interest Rate in the 1930s



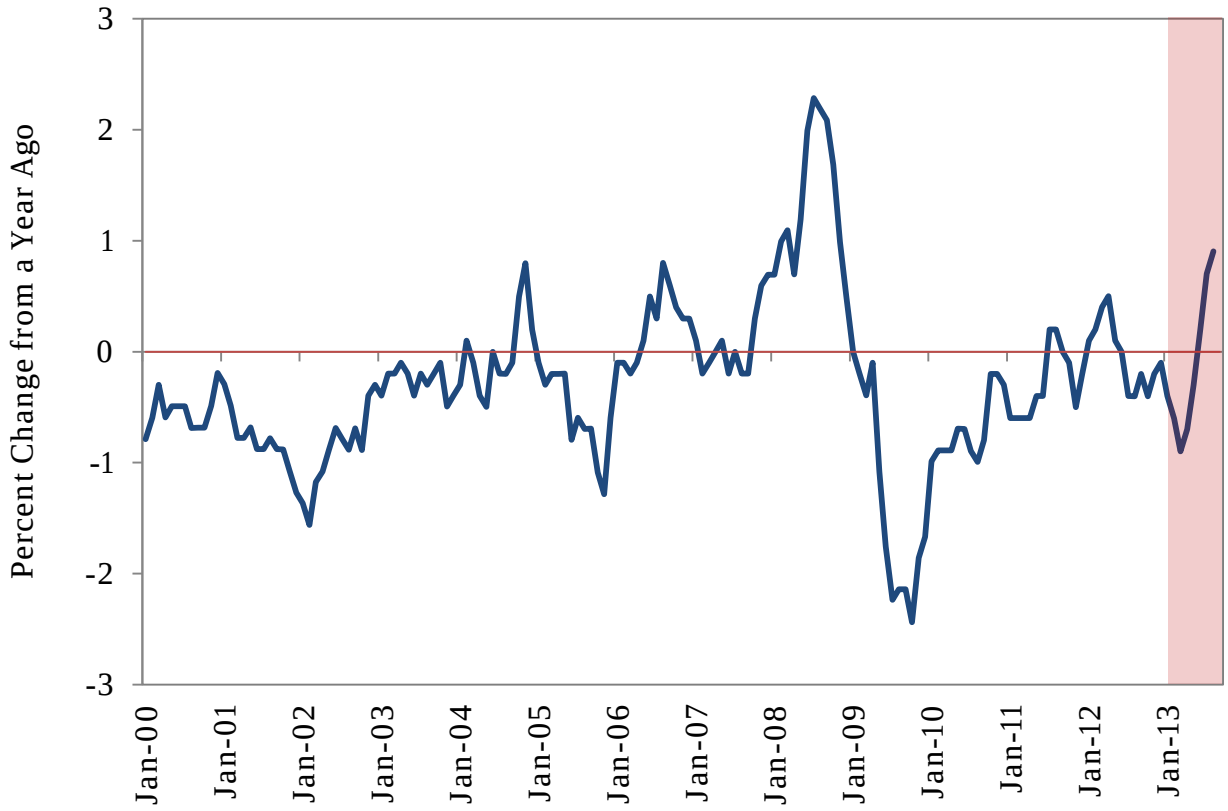
Source: Romer, 1992, p. 778.

Figure 7
Rapid Turnaround of Truck Sales



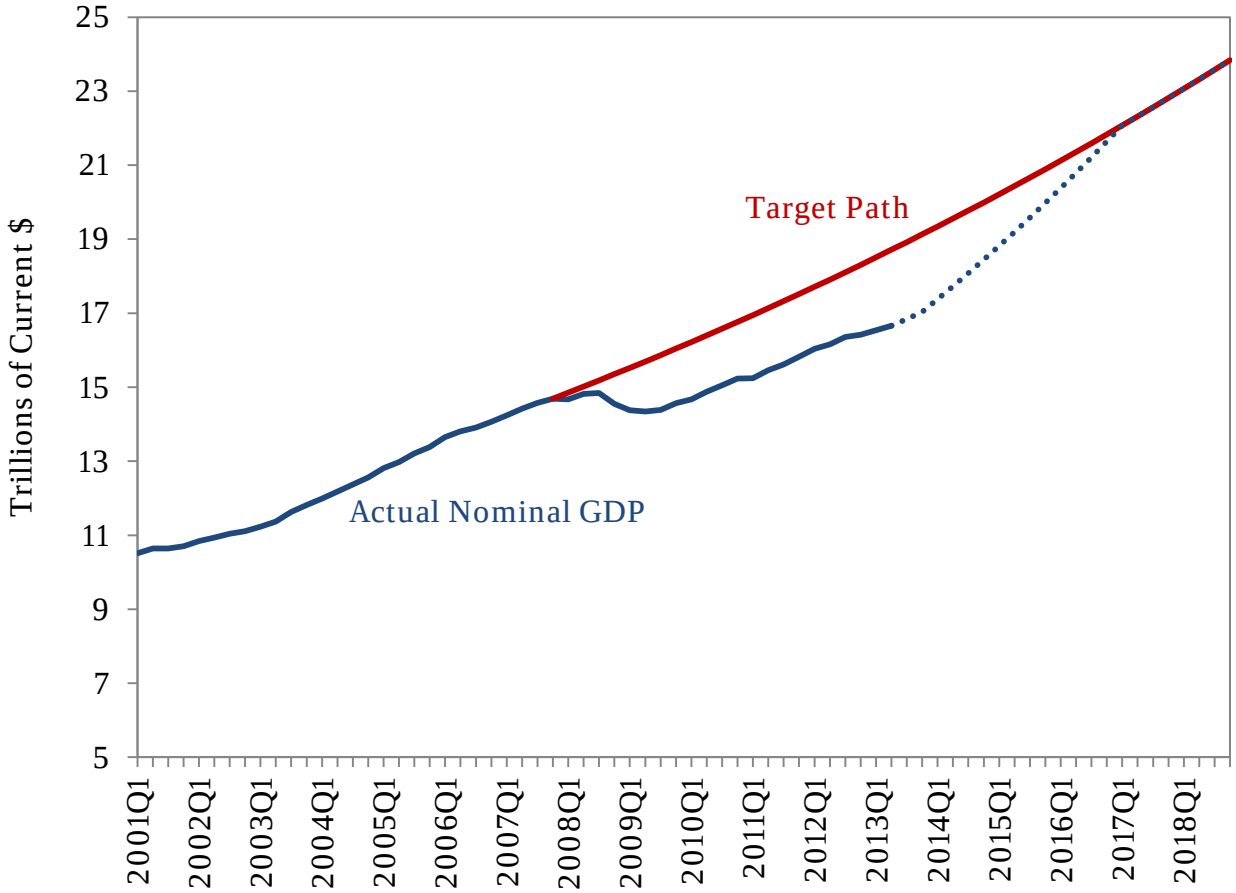
Source: NBER Macrohistory Database.

Figure 8
Inflation in Japan



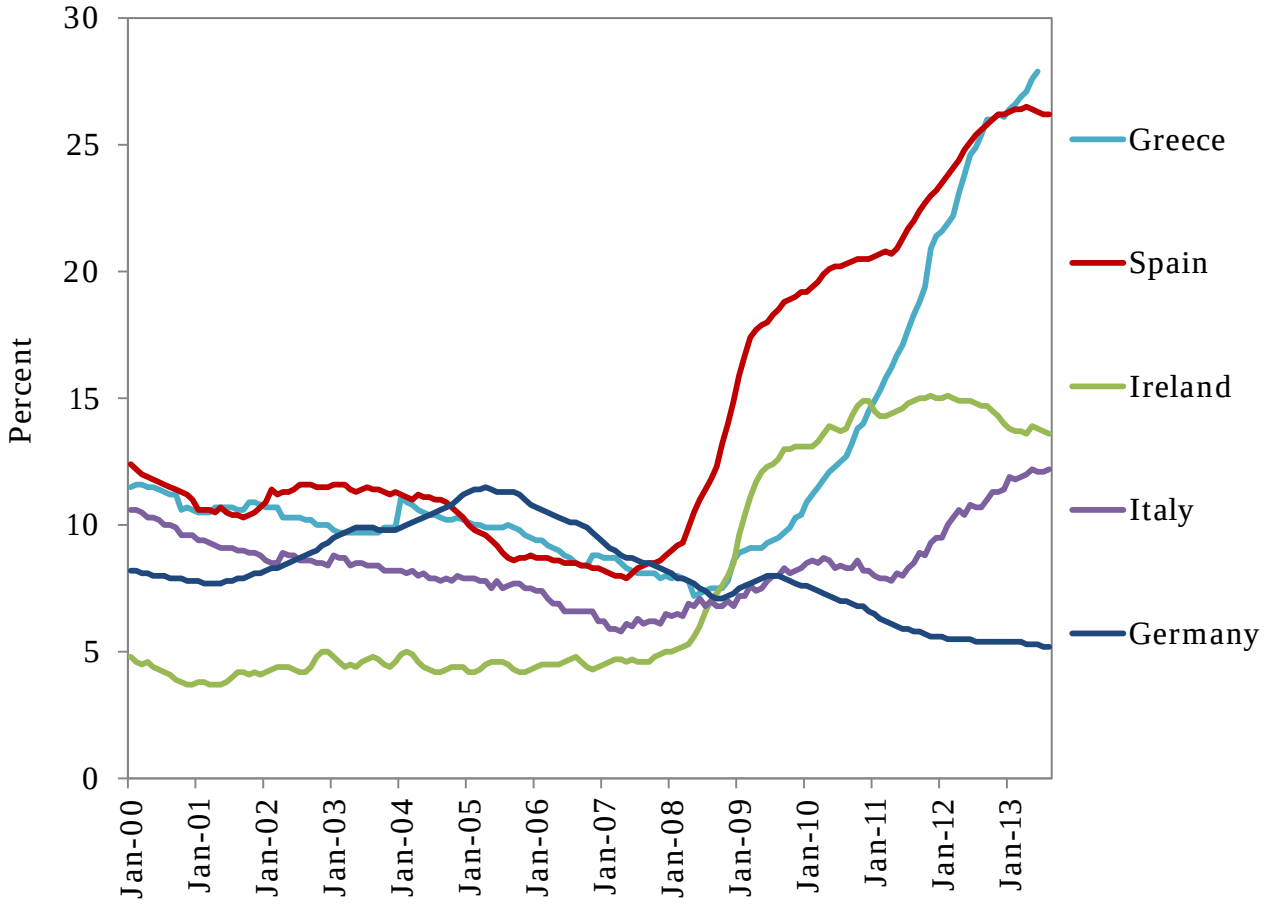
Source: Federal Reserve Bank of St. Louis, FRED Economic Data.

Figure 9
Targeting a Path for Nominal GDP



Sources: Bureau of Economic Analysis and author's calculations.

Figure 10
Unemployment in Europe

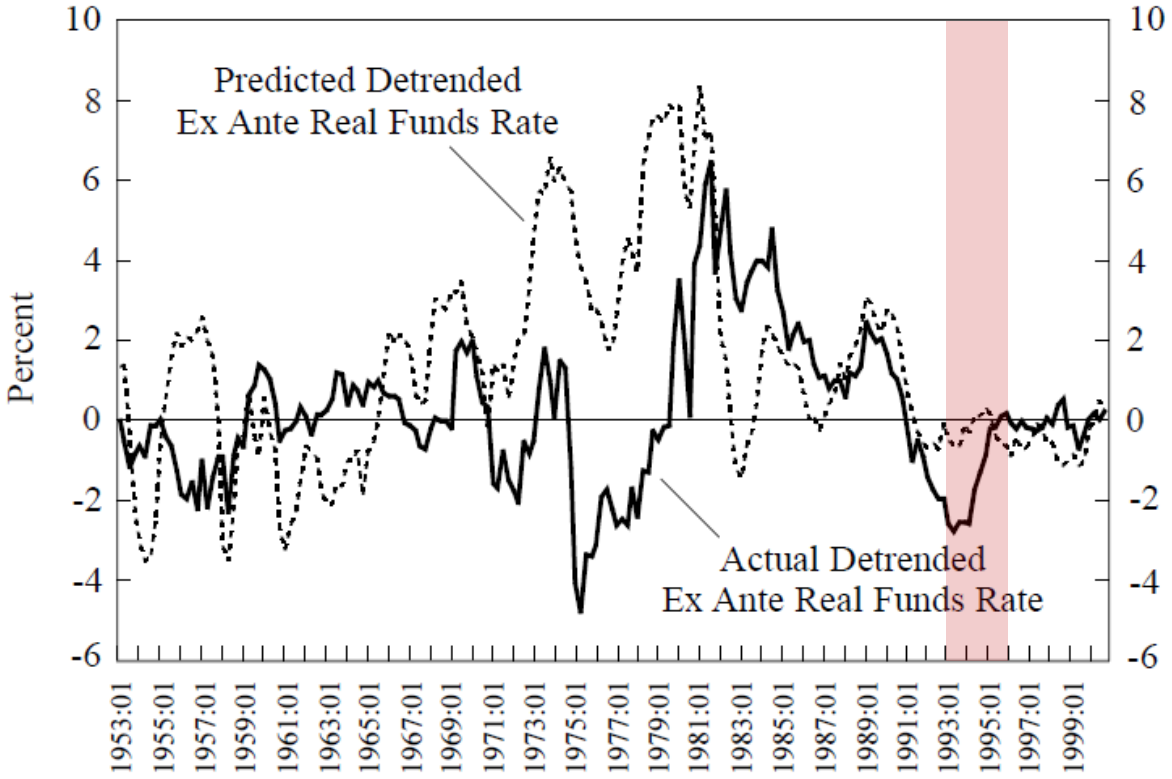


Source: Eurostat.

Figure 11
Wooing Alan Greenspan

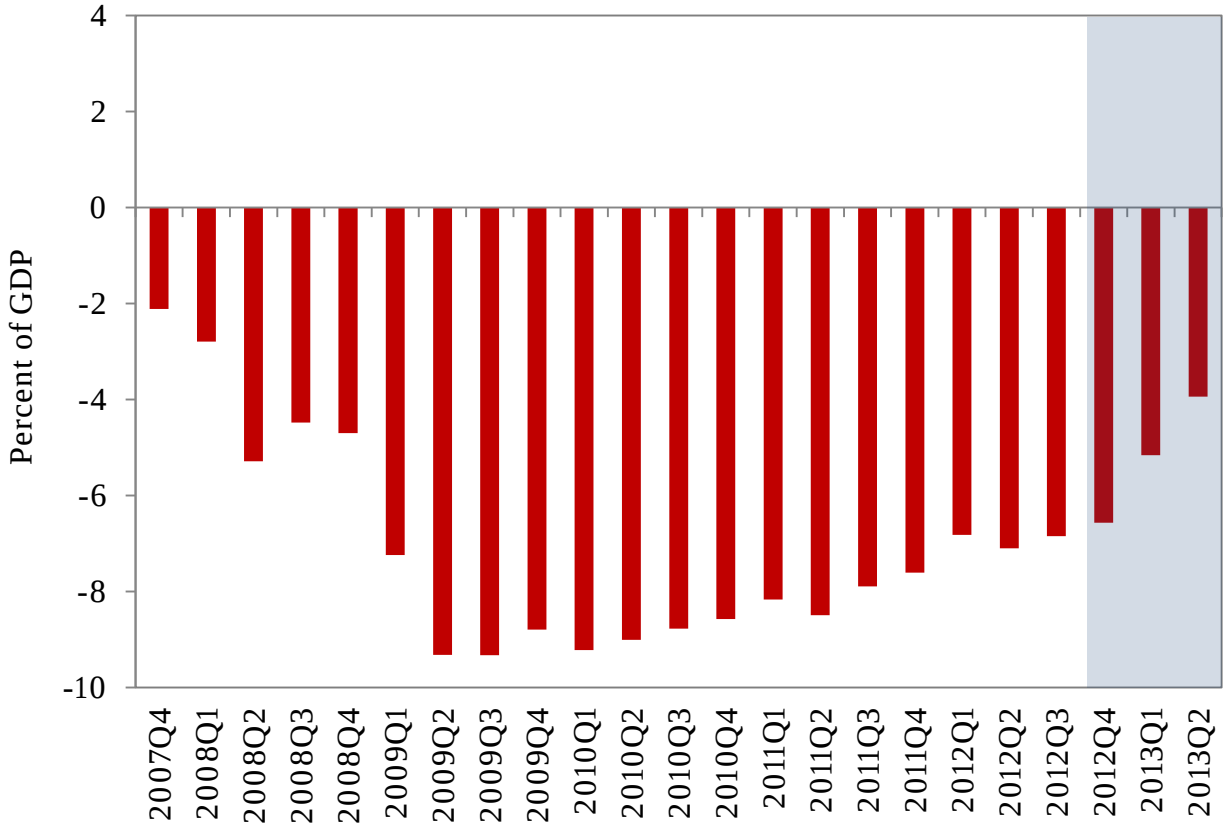
Source: *Spartanburg Herald-Journal*, February 21, 1993 p. B10.

Figure 12
Actual Real Federal Funds Rate and Prediction from a Monetary Policy Rule



Source: Romer and Romer, 2002, p. 68.

Figure 13
U.S. Federal Budget Deficit



Source: Bureau of Economic Analysis.

NOTES

* An earlier version of this lecture was presented at Humboldt State University on October 7, 2013.

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