It's a Wonderful Fed[1]

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Introduction

Thank you very much for that generous introduction, and thanks to the University of Minnesota for the opportunity to address this special group. I was fortunate enough to give the commencement address at the College of Liberal Arts last May. At that time, I stressed to the graduates how their educations were designed to prepare them for a lifetime of learning. I feel sure that such a message would have resonated even more with this group. Indeed, you've left your warm homes on a cold February night to engage in exactly that kind of learning—to hear about the economy and the Federal Reserve. And I want you to know that I also look forward to learning from you during our discussion that will follow my remarks.

My speech this evening will have two distinct parts. In the first part, I will discuss my outlook for the economy in 2011. In the second part, I will look back in time to the Great Recession of 2007-09. My discussion will parallel the classic Frank Capra movie, "It's a Wonderful Life." In that movie, the hero, George Bailey, is granted the miraculous opportunity to see how other lives would have been affected if he had never existed. I will do the same for the Federal Reserve and describe how I believe the Great Recession of 2007-09 would have unfolded if the Fed did not exist.

As always, I am speaking for myself today, and not others in the Federal Reserve or on the Federal Open Market Committee.

Outlook

In my outlook, I'll focus on the three variables of most interest to us at the Federal Open Market Committee (FOMC): real gross domestic product (GDP),

unemployment, and inflation. My bottom line is that, from the point of view of the macroeconomy, 2011 will be a better year than 2010.

Last week we learned that real GDP, which measures the nation's production of goods and services adjusted for inflation, grew at a 3.2 percent annual rate during the fourth quarter of 2010. That growth was slightly higher than the average growth of 2.8 percent during the year—that is, from the fourth quarter of 2009 to the fourth quarter of 2010. Output has finally recovered to its prerecession level—it is 0.1 percent above the level of output in the fourth quarter of 2007. However, we cannot celebrate too much. The population of the United States has grown about 2.6 percent from November 2007 through November 2010. This means that real GDP per person is still 2.5 percent lower than its level in the fourth quarter of 2007. Also, historically, real GDP per person in the United States grows at roughly 2 percent per year. Suppose that real GDP per person had grown at that rate over the past three years. Then, real GDP would be 8.5 percent higher in the fourth quarter of 2010 than it actually is. As you will hear, I expect this 8.5 percent differential to change little, if at all, by the end of 2011. The recession has had and will continue to have a large and persistent impact on the U.S. economy.

At the November 2010 FOMC meeting, participants submitted forecasts for real GDP growth in 2011. The central tendency of these forecasts, which omits the lowest three and the highest three, is that real GDP growth would be between 3 percent and 3.6 percent in 2011. However, these forecasts were made before we knew about the tax changes for 2011 that ended up being instituted in December.

Even with the December changes in fiscal policy, I would say that I expect that real GDP growth will probably be closer to 3 percent than 4 percent in 2011. I still see two major headwinds in the U.S. economy. The first is that many households will continue to strive to rebuild their net worth positions in response to past—and possibly future—falls in residential land prices. As I will explain in more detail later, I believe that the decline in household net worth, precipitated by falls in land values, was a key factor in generating the severity of the Great Recession. It will remain important in the recovery.

The second headwind is related. Many banks in the United States face ongoing issues with asset quality. For example, the FDIC problem-bank list contains over 800 banks. Problem banks are less likely to take the risk of lending to small and/or younger firms and other entrepreneurial activity. Instead, they are more likely to preserve capital ratios by limiting their asset growth and allocating their lending staff to working out loans to existing borrowers. Indeed, as the economy improves, I suspect that this headwind will become even more important. In 2010, our information at the Minneapolis Fed indicates that small businesses were reluctant to expand because of ongoing uncertainties about product demand. As a result, their demand for bank financing remained low. In 2011, as the economy improves, I expect loan demand to rise accordingly—but banks with poor asset quality will continue to focus on capital preservation rather than loan expansion.

Turning to labor markets, the unemployment rate fell to 9.4 percent in December from 9.8 percent in November. While any decline is welcome news, I do not

think this single data point signals a rapid recovery in labor markets. Employment growth remains disappointingly low—nonfarm employment increased by only 103,000 in December.

I think it is important to understand how unemployment fell by 40 basis points from November to December, even though employment growth was relatively low. Here, it's helpful to recall how the Census Bureau measures unemployment. Every month, the Census Bureau interviews 60,000 households consisting of about 110,000 individuals. The bureau asks a host of questions, but there are two particularly important ones: Have you worked for pay or profit in the past week? If not, have you looked for work in the past four weeks? The former group is counted as the employed. The second group is counted as the unemployed. The sum of these groups is called the labor force. Anyone who answers no to both questions is regarded as being out of the labor force. The unemployment rate is defined to be the fraction of people in the labor force who are unemployed.

This definition means that the unemployment rate can fall in two distinct ways. It can fall through unemployed people becoming employed. Alternatively, it can fall by unemployed people ceasing to look for work. The second channel was significant in shaping the employment picture in December. In that one month, the labor force fell by 260,000—certainly a large move by historical standards. The available data do suggest that most of the unemployed who left the labor force were young. The number of people under the age of 25 in the labor force fell by about 244,000 from November to

December. My hope—and expectation—is that many of these people will return to the labor force as the economy improves in 2011.

Nonetheless, I do not believe that either unemployment or employment will improve rapidly in 2011. Startup businesses and other young firms are a key source of employment growth in the early stages of recoveries. As I've mentioned earlier, they are likely to find bank financing more challenging to obtain than usual. As well, 4.2 percent of the labor force has been unemployed for longer than six months. Historically, this group of workers has a low job-finding rate.

The central tendency of the November FOMC forecasts is that unemployment will remain above 9 percent throughout 2011. I would agree with those forecasts. Even more troublingly, I expect too that unemployment is likely to be higher than 8 percent as late as the end of 2012.

Finally, I turn to inflation. Inflation was extraordinarily low in 2010. From the fourth quarter of 2009 through the fourth quarter of 2010, headline PCE inflation was 1.2 percent. The term "headline" means that this measure includes both food and energy. But fluctuations in food and energy prices are typically transient and volatile. For this reason, core PCE inflation—inflation measured without food and energy—has historically been a better predictor of future headline PCE inflation than headline PCE inflation itself. Core PCE inflation over 2010 was even lower: only 0.8 percent.

These inflation levels are too low to be consistent with usual formulations of the Fed's price stability mandate. More troublingly, inflation fell substantially in 2010. From the fourth quarter of 2008 through the fourth quarter of 2009, core PCE inflation was

1.7 percent. Hence, in the course of one year, inflation rates fell by 90 basis points. A further deceleration of the same magnitude in 2011 would drive core PCE inflation into negative territory.

With that said, I'm optimistic that inflation will actually turn north in 2011. Our Minneapolis Fed forecasting model indicates that, over the course of 2011, inflation will be around 1.5 percent. We can get another reading by looking at the prices of financial instruments called zero-coupon inflation-indexed swaps. Their current prices imply that, for the coming year, expected inflation will be roughly 1.7 percent.

To summarize: I expect real output to grow slightly more rapidly in 2011 than in 2010. Household deleveraging and bank asset quality will remain a drag on the recovery. Unemployment will fall—but much more slowly than we would like. Finally, as is suggested by financial market data, I am optimistic that inflation will be higher in 2011 than in 2010, while still remaining under 2 percent.

The Fed's Responses and Their Benefits

Let me turn now to the second part of my speech. The National Bureau of Economic Research's business dating committee serves as the official arbiter of recessions. The committee has determined that the Great Recession began in December 2007 and ended in June 2009. During that time period, real GDP fell by 4 percent and unemployment nearly doubled.

The Federal Reserve responded to the Great Recession and the associated financial crisis in a number of ways. These responses fall roughly into two classes. First, the Fed engaged in a vast amount of lending to firms believed to be in sound condition.

It lent through conventional vehicles like the discount window and swaps with foreign central banks. But it also lent through relatively unconventional vehicles like the Term Asset-Backed Securities Loan Facility.[2] I'll briefly discuss how this lending is distinct from the Fed's injection of funds into obviously nonsolvent institutions like AIG.

Second, the Fed lowered the real interest rate facing borrowers and lenders. Here, I should clarify some terminology. By the term "real interest rate," I'm referring to the interest rate received by lenders net of inflation. Thus, if the interest rate on the loan is 5 percent and lenders expect inflation to be around 2 percent, the real interest rate is roughly 3 percent. Economists generally think that the real interest rate, not the nominal interest rate, matters for economic decision-making.

Early in the recession, the Fed lowered its target for the fed funds rate. Given that inflation expectations remained stable, this action served to lower the real interest rate. By early 2009, when the fed funds target essentially reached its lower bound, the Fed used large-scale asset purchases to achieve further reductions in the real interest rate.

I'll first discuss the lending responses and then talk about the interest rate cuts. I'll then discuss how I believe economic events would have unfolded had there been no Fed.

Lending

To understand the Fed's responses to the events of 2007-09, we need to step back to the second half of 2006. At that point in time, firms and people around the world held a wide array of financial assets that were ultimately backed by U.S.

[2] See Willardson (2008) and Willardson and Pederson (2010).

residential land. (Think, for example, of mortgage-backed securities or any asset backed by mortgage-backed securities.) They viewed those assets as being largely free of risk. Investors may have understood that a fall in the value of U.S. land would impose large losses on them. However, they put low odds on such a decline taking place. Rather, they seemed to believe that U.S. land prices would continue to rise at a steady clip.

By the second half of 2007, that belief began to unravel in the face of incoming data. People were beginning to learn the hard way that U.S. land was a risky investment. Now the only question was how risky. The uncertainty about the answer to this question planted the seeds for a global financial panic.

What do I mean by the term "financial panic"? Financial panics are events that blur the line between liquidity and solvency. A firm is solvent if its revenues (in a discounted present value sense) exceed its expenditures. A firm is liquid if it is able to raise enough funds—either by borrowing or by selling assets—to pay its current costs. In a well-functioning financial market, solvent firms are typically liquid, because they are able to borrow against their future profits. In contrast, in a financial panic, lenders feel unable to assess the future profits and/or collateral of borrowers. Borrowing becomes highly constrained, and even highly solvent firms may become illiquid.

During the mid-2000s, many forms of collateral around the world were either implicitly or explicitly backed by U.S. residential land. As I've described, beginning in mid-2007, it became clear that this asset had more risk than financial markets had originally appreciated. It was not clear, though, how much more risk was involved. As a result, financial markets became increasingly uncertain about how to evaluate assets

backed by U.S. land. That uncertainty translated into uncertainty about the ultimate solvency of institutions holding those assets—and the ultimate solvency of any of those institutions' creditors. Spreads in credit markets between Treasury returns and other bond returns began to widen—at first slightly and then alarmingly.

I would say that most economists agree about how central banks should respond to financial panics. The crux of that agreed-upon response is that central banks have to be willing to lend freely to solvent firms, against a wide range of good collateral, at some kind of penalty rate. This policy is useful for two reasons. First, it provides a source of funds to potential borrowers who are illiquid but nonetheless solvent. Second, it provides a floor to collateral valuation. Private lenders know that they can always use collateral seized from a defaulting borrower as a vehicle to borrow money from the central bank. That baseline use serves to spur private lending.

Beginning in mid-2007, the Fed took a number of actions consistent with this operating principle. It lent money to financial institutions through the discount window and its close cousin, the Term Auction Facility. It injected liquidity into a broad range of essential credit markets through a veritable alphabet soup of special lending vehicles. In some sense, these interventions were typical for a central bank operating in the context of a financial panic. But the size of the problem meant that the operations were—to an extent—unprecedented in their scale. At their peak, the interventions made up more than a trillion dollars of Federal Reserve assets.

There is no doubt that these interventions saved many solvent firms from collapse during the financial crisis. Over time, panic eased and spreads in financial

markets normalized. Once that happened, the private sector stopped borrowing from the Fed because it found the Fed's penalty rates too onerous. As a result, the Fed was able to shut down its special lending facilities in 2010.

It is plausible that the Fed's loans through the various special facilities exposed it—and by extension, the American public—to some risk of loss. However, it is difficult to know how much risk was involved. We generally try to measure a financial asset's risk by the spread between its yield and that of a safe benchmark like U.S. Treasuries. But in a financial panic, a relatively large fraction of such a spread is attributable to illiquidity as opposed to intrinsic risk. The goal of the central bank's intervention is exactly to eliminate this panic-driven illiquidity. Accordingly, we cannot gauge the Fed's risk exposures without somehow correcting spreads for this illiquidity factor. This calculation strikes me as a nontrivial one. What we can say is that the Fed has not lost a penny on any of these transactions.

The lending that I've described differs greatly from the institution-specific assistance the Federal Reserve provided to firms like AIG. These institution-specific interventions were deemed necessary by the Fed and the Bush administration because of deficiencies in the existing resolution regime for systemically important financial institutions. The Dodd-Frank Act addresses these deficiencies. Simultaneously—and correctly—the Dodd-Frank Act removes the Fed's ability to engage in institution-specific assistance. The act does leave in place the Fed's ability to engage in broad-based market interventions of the kind that I've described, albeit with more congressional and White House oversight.

Cutting Interest Rates

I've talked about how the fall in land prices generated a sharp increase in risk perceptions in financial markets, and how that in turn led to a financial crisis. I now want to turn to what I see as the second key effect of the fall in land prices. This fall reduced the net worth of many households and firms.[3] They responded by forgoing consumption and investment projects. The fall in household demand for consumption and firm demand for investment led in turn to a fall in output and employment,[4] and put downward pressure on the price level.

The FOMC reacted by lowering its target interest rate from 5.25 percent in August 2007 to a range of 0-25 basis points in December 2008. Since inflation expectations remained stable, the FOMC's action has the effect of lowering the real interest rate facing households. Households respond by saving less and demanding more consumption. Similarly, firms undertake more investment projects. In this way, the FOMC can partially offset the impact on the economy of the loss of net worth.

Lowering rates, of course, may lead to undesirable inflationary pressures within the economy. However, the recent path of inflation shows little evidence of such pressures. From the fourth quarter of 2006 through the fourth quarter of 2007, core PCE inflation was 2.4 percent. As I mentioned earlier, core inflation from the fourth quarter of 2009 to the fourth quarter of 2010 was considerably lower at only 0.8 percent. The

[3] Household net worth fell by over 25 percent from the second quarter of 2007 through the first quarter of 2009 (Fed Flow of Funds).

[4] See Kocherlakota (2010) for a more extensive discussion of the relevant transmission mechanisms.

fall in headline PCE inflation (which includes food and energy) has been even more dramatic: from 3.5 percent down to 1.2 percent.

Indeed, given the fall in inflation and the high rate of unemployment, the FOMC would probably have liked to respond by cutting its target interest rate still further. The problem is that the target interest rate is essentially at zero and cannot go negative. Instead, from December 2008 through March 2010, and again beginning in November 2010, the FOMC engaged in large-scale purchases of long-term Treasuries. The goal of these transactions is to lower long-term real interest rates and again offset the impact on the economy of the net worth shock.

Thus, the fall in land prices triggered an increase in risk perceptions and a decrease in household net worth. The increase in risk led to a major financial crisis that has been cured, thanks in no little part to actions by the Federal Reserve. The decrease in net worth led to a major recession and ongoing slow recovery. The Federal Reserve's reduction in interest rates has lessened the impact of the net worth shock.

George—Meet Clarence

But now I turn to the hypothetical posed in the last third of "It's a Wonderful Life." Suppose that there were no Fed. What would have happened to the U.S. economy in the past three years?

The Federal Reserve's key power is that it has the ability to adjust the size of what's called the monetary base. The monetary base has two components. The first component is currency—the bills and coins that we use for transactions. The second component consists of what's called "bank reserves." These are essentially the deposits

that various banks hold with the Fed. The Fed has expanded the monetary base by more than 100 percent from September 2008 through the end of 2010. To me, an America without a Fed means an America in which the monetary base is fixed in size.

So, suppose the monetary base had been fixed in the past three years at its December 2007 level. What would have happened? One consequence is immediate. The Federal Reserve funded its various lending programs by creating large amounts of bank reserves. If the monetary base were fixed in size, the Fed could not have created those lending initiatives. As a result, many more solvent financial institutions would have failed during the financial panic.

More subtly, the limitation on the size of the monetary base would have made currency and bank reserves scarcer after 2007. Their scarcity would make these monetary assets more valuable in a couple of senses. First, they would have been more valuable relative to other financial assets. That means bond prices would have been lower and so bond yields higher. Second, currency and bank reserves would have been more valuable relative to consumer goods. Hence, expected inflation and realized inflation would have been lower over the past three years.

Higher bond yields and lower expected inflation work together to imply that households and firms would have faced higher real interest rates. Their demand for consumption and investment would have been lower. Thus, if the Federal Reserve could not have adjusted the monetary base upward, real GDP would have fallen by even more than 4 percent and unemployment would have been well above 10 percent.

As with any counterfactual, these ruminations are necessarily conjectural. But there are data to support them. In the early years of the Great Depression, the United States was on the gold standard and the Fed could not easily adjust the quantity of bank reserves. As a result, the Fed did not engage in broad-based lending during the 1929-33 period. Nor did it cut interest rates aggressively. By 1933, hosts of financial institutions had failed, real GDP had fallen by over 25 percent, unemployment was 25 percent, and the nation had experienced annual double-digit rates of deflation. The Fed's passiveness in 1929-33 was associated with an economic catastrophe. Many scholars—including Milton Friedman and Fed Chairman Ben Bernanke—have argued that much of this association should in fact be viewed as causal.

Did the Fed Cause the Bubble?

My version of "It's a Wonderful Life" may strike some as incomplete because it starts in 2007. Those listeners might ask: Was the land price appreciation in the United States in the early 2000s due to the Fed's low interest rate policy? If so, we might have to recast the Fed as being more akin to the unfortunate Uncle Billy than to George.

But my answer to this query would be no. The problem for this story is that land prices actually started to grow at a surprisingly fast rate when the Fed was following a relatively tight policy. To be concrete, from 1975 to 1996, land prices grew in real terms at less than 2 percent per year. In contrast, from 1996 to 2001, land prices grew by 11 percent per year in real terms, while the Fed maintained its target interest rate between

4.75 percent and 6.5 percent.[5] This is hardly considered to be loose monetary policy, especially given that the economy was entering recession toward the end of this period. It is true that the rate of growth of land prices did accelerate still further—to 17 percent per year—in the next five years. But I think that the data clearly say that the fast rate of growth in U.S. land prices—what's sometimes called a "bubble" in land prices—originally started in 1996, without any obvious change in Fed policy.

I have to say that this lack of an empirical connection is not surprising to me. At least at present, there is little or no economic theory to support a connection between monetary policy, as typically conducted in the United States, and bubble formation.[6]

But, if not the Fed, what or who was responsible for the high price of U.S. residential land? My views are more agnostic on this point. I have heard several plausible stories. In general, though, I think that the stories tend to be overly focused on the United States in the 2000s. We saw large run-ups in land prices, followed by large falls in land prices, in many other parts of the world in the 2000s. And these episodes have recurred repeatedly throughout history. We need to develop macroeconomic models and modes of thought that can successfully confront this broader scope of economic data.

Conclusion

[5] I'm using the Lincoln Institute of Land Policy CSW data at http://www.lincolninst.edu/subcenters/land-values/price-and-quantity.asp. This data set is an extension of data originally constructed by Heathcote and Davis (2007).

[6] To be clear, there are many models in which the path of the total value of outstanding government liabilities can affect the size of bubbles. However, during the period of rapid land price appreciation, the Federal Reserve's policy interventions took the form of open market operations. By design, these activities do not affect the total value of outstanding government liabilities. See Kocherlakota (2010).

Let me wrap up. We have come through a very difficult recession, caused in no little part by the large fall in land prices that took place after 2006. I believe that the size of this shock meant that this recession was going to be a painful and challenging one, regardless of the policy response. Nonetheless, it is clear to me that the recession and its subsequent recovery would have been significantly worse in the absence of the actions of the Federal Reserve.

Now, we have a couple of choices. We can conclude as in "It's a Wonderful Life," and I can lead you in a rousing chorus of "Auld Lang Syne." Or we can start taking questions. As with any choice, I'm sure that you find the trade-offs daunting. Nonetheless, those who know my singing talents well will tell you: We should move to questions.

Thank you very much.

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