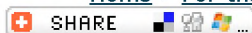


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## Managing Information, Uncertainty, and Risk in Monetary Policy

It is a pleasure for me to speak today to members of the CFA Society, the Risk Management Association, and the Cleveland Association for Business Economics. It's also nice for me to return to The City Club, which is truly one of our city's assets, as it has been for the last 100 years.

This year, the Federal Reserve will join the centennial club and mark its 100th year as the nation's central bank. One function of the Federal Reserve is to set monetary policy, and as a Federal Reserve Bank president, I am a participant on the Federal Open Market Committee, which is the policymaking body of the Federal Reserve.

In some ways, the challenges the Federal Reserve faces in setting monetary policy are similar to those that many of you in this room face: we have to make decisions with incomplete information, we have to contend with uncertainty, and we have to manage risks. CFAs, risk management professionals, and business economists deal with these issues as they pertain to investment opportunities, business prospects, and the macroeconomic outlook. The FOMC deals with similar issues in the process of conducting monetary policy. Information, uncertainty, and risk have clearly factored into my policy decisions during the past 10 years.

A wise central banker once said that uncertainty is not just a pervasive feature of the monetary policy landscape; it is the defining characteristic of that landscape. That concept has certainly held true in recent years. In the extraordinary times we experienced during and after the recent financial crisis, the Federal Reserve has been challenged to understand how the economy's performance has deviated from historic norms. We have had to adapt our monetary policy actions to fit changes in economic data, revised forecasts, and emerging risks. Perhaps most challenging, we've had to rely on unconventional tools as we have repeatedly eased monetary policy, and we will have to rely on unconventional tools in the future, when the time comes to reverse course.

Today, I will talk about some of the exceptional circumstances the FOMC has had to address in recent years. First, I will briefly describe the important role economic projections play in setting monetary policy. Next, I will explain the monetary policy actions we have taken. Finally, I will talk about the benefits and potential risks of our policies. Please note that the views expressed here are my own and do not necessarily reflect the views of my colleagues in the Federal Reserve System.

### Additional Information

**Sandra Pianalto**

*President and CEO,  
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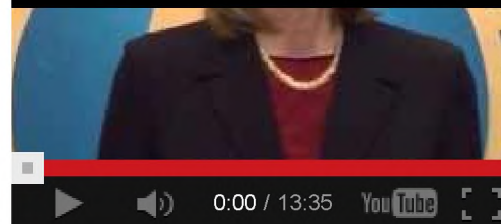
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Part 1:

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Let me begin by emphasizing the importance of the economic outlook in the setting of monetary policy. The FOMC conducts monetary policy to promote maximum employment and price stability, which are goals that have been given to the Federal Reserve by the U.S. Congress. That means we want as many Americans as possible who want jobs to have jobs, and we want inflation to be low and stable. We refer to these goals as our "dual mandate," and we pursue these goals primarily by influencing the level of interest rates and other financial conditions.

Monetary policy typically affects the economy with a lag. It takes time for changes in interest rates to filter through to economic activity; as an example, lower interest rates can lead to increased borrowing, spending, and demand for goods and services, but it takes time to produce the additional output to satisfy that demand. It usually takes even longer for monetary policy to affect inflation rates, because businesses tend to adjust their prices over time, and in response to a number of considerations.

Because of this lag from our monetary policy actions to economic activity and inflation, monetary policy needs to be forward-looking, and therefore, relies heavily on the economic outlook. The outlook is based on an assessment of current economic information, models of the relationships between important economic variables, and the expected effects of our policy actions. We also consider the risks to the outlook, that is, factors that could lead our projections to be off track in one direction or another.

Economic forecasting is difficult, even in the best of circumstances, but it has been extremely challenging during the past few years. Many forecasters have overestimated economic growth, employment, and inflation. In hindsight, we know that the economy has grown more slowly than many thought it would. There are several factors that have restrained the economy, including the severity of the housing market downturn, household and business deleveraging, and uncertainty. While I will focus on these three factors, there are other factors, such as the European debt and financial crises, and turmoil over U.S. fiscal policy, that have surely hampered our economy's recovery.

Home prices began to fall before the financial crisis--indeed, the decline in housing prices fueled the financial crisis. While housing is a relatively small part of the economy, it plays a disproportionately large role in driving the business cycle. Research conducted by economists at my Bank<sup>1</sup> indicates that weakness in spending on housing during the recovery has played an important role in accounting for the slowness of the recovery. In another research finding by my Bank's economists, we learned that the decline in housing prices posed a significant constraint to small business lending because small business owners often use their own homes as collateral to finance their businesses<sup>2</sup>. For some, the value of their homes decreased, which constrained their ability to borrow. I and other economists understood that housing wealth matters; however, it took time and analysis to fully appreciate the many different ways in which declining housing wealth would restrain the economic recovery.

The second factor, debt reduction, which we often refer to as deleveraging, has also restrained the recovery. The net worth of many households and businesses declined during the financial crisis as various asset prices, from real estate to stocks, fell. Feeling poorer, consumers and businesses curtailed spending and borrowing, paid down debt, and rebuilt their balance sheets, which also caused economic growth to slow.

Banks have also deleveraged. During the recession and recovery, the financial system became impaired through a loss of capital, and financial firms held relatively more distressed assets on their books, such as mortgages that were unlikely to be repaid and securities that were worth less than they were before the crisis. Financial firms that were weakened focused on increasing liquidity, reducing risk, and rebuilding capital. Additionally, lending activity shrank as uncertainty about the future made households and businesses less likely to apply for a loan and as banks imposed tighter lending standards on borrowers, making more of them ineligible for loans. This decrease in economic activity was not unexpected, but I and many other economists certainly underestimated the depth and the length of time that the deleveraging would last. Indeed, today, five years after the financial crisis, many households and banks are still reducing their debt.

The third factor that has been restraining the economy is uncertainty. We've learned that uncertainty affects economic decision-making in ways that are simply not captured in conventional forecasting models. Even after accounting for the fact that declining net worth may have prevented some households and businesses from borrowing, and that banks had to reduce the amount of credit they extended for lack of more capital, the fact remains that households and businesses alike have reined in spending to preserve cash in the face of an unknown future. Holding onto cash provides consumers and businesses with an option to spend later, when they think they can better predict a more positive future. Many companies have seemed especially reluctant to invest and to hire new employees. Corporate America has not yet returned to what I think of as "normal risk-taking." In this sort of environment, economic activity of all kinds tends to be below what models would predict, simply because people are taking less risk for a given level of income and wealth.

The depth of the housing market collapse, deleveraging, and uncertainty are three important reasons why many economic forecasters, me included, have tended to overestimate the strength of the recovery. And as the economy has consistently underperformed expectations, the FOMC has had to make more aggressive monetary policy decisions than we initially expected.

Let me explain some of those actions, beginning in the fall of 2008. All the information available at the time indicated that financial markets were in turmoil, the economy was contracting severely, and no one was certain when the pressures on the economy would abate. The outlook for the economy was extremely poor, and it was clear that significant monetary policy stimulus was warranted. The Federal Reserve had already lowered the short-term interest rate that we control, called the federal funds rate, to nearly zero between 2007 and 2008. Lowering interest rates, in theory, gives consumers and businesses more purchasing power and is one tool we use to nudge the economy back in the right direction. But it was not enough. And once we pushed the federal funds rate close to zero and it could go no lower, we had to use other, less-familiar tools, in an effort to support economic growth and maintain price stability. One of those tools was large-scale asset purchases, which were designed to put downward pressure on long-term interest rates to stimulate economic growth.

The Federal Reserve announced a series of large-scale asset purchases starting in November 2008 with the first asset purchase program, which is popularly known as quantitative easing, or QE1. Since then, the Federal Reserve has announced several additional actions, and we expected each to help return the economy to self-sustaining health. We now know that didn't happen.

Within a few months of announcing QE1, it became apparent to the FOMC that the economy would shrink in 2009, and by March 2009, the situation looked dire. The FOMC downgraded its outlook again and announced that it would significantly expand QE1. At this point, the FOMC expected QE1 to be "large enough" to stimulate the economic recovery.

Although the recovery officially began in the summer of 2009, the economy continued to underperform. The shortfall, in my opinion, was not because our policy actions were ineffective; on the contrary, economic performance would have been much worse if we had not acted. Nevertheless, by late 2010, it was clear that the pace of recovery remained slower than anticipated, and a risk of deflation entered the picture, which led to QE2—another round of quantitative easing—in November 2010. Like QE1, it seemed QE2 would be a one-time program of a specific size and duration.

As we moved through early 2011, the economy appeared to be adequately expanding, but in the middle of 2011, the economy once again began to underperform relative to expectations. Then, in July 2011, an especially troubling piece of new information came in: the Commerce Department revised GDP data downward, going back for several years. The revised data indicated that the 2007-2009 recession was deeper than previously thought, and the subsequent period of expansion was less robust than initially reported. Other incoming data had also been disappointing, and uncertainties about Europe and U.S. fiscal policy emerged as risks to the economy performing as the FOMC previously expected.

Between September 2011 and September 2012, the FOMC took additional steps to ease monetary conditions. We initiated the Maturity Extension Program, known as Operation Twist, in which we sold short-term Treasury securities from our portfolio and used the proceeds to purchase longer-term Treasuries. This program put additional downward pressure on long-term interest rates. We also adjusted our forward guidance on the federal funds rate, indicating that the likely time of the first rate increase would be even further in the future than had been previously anticipated.

Despite these actions, economic activity was expanding at a slow pace and labor market conditions remained weak. This outlook and other considerations led the Committee to announce QE3 in September 2012. But, unlike the first two QE programs, which were of fixed sizes and durations, the Committee is now conducting open-ended asset purchases until the outlook for labor conditions significantly improves. The open-ended approach to asset purchases allows the program to better respond to economic conditions. If conditions rapidly improve, then the program can be scaled down or stopped; if conditions worsen, the program can be scaled up or extended. The open-ended approach also enables the FOMC to respond more flexibly to changes in the benefits and risks that the program may entail.

I believe that our monetary policy actions since the financial crisis have helped move the economy in the right direction. We have had to act during times when we had imperfect information, when we faced many uncertainties, and when risks to the economy were surfacing regularly; nevertheless, I think our monetary policy decisions were appropriate at each turn. But as my narrative about the past few years makes clear, a number of forces have been acting to restrain growth throughout the recovery, and I have adjusted my forecast accordingly. Looking ahead, my current outlook is that the economy will grow a little more than 2-1/2 percent this year and about 3 percent in 2014. With economic growth around 2-1/2 to 3 percent, I expect the unemployment rate to decline to around 7-1/2

percent this year and to around 7 percent at the end of 2014.

Despite the fact that I am expecting only moderate growth for the next couple of years, I am encouraged by the data that has come in during the past few months. Consumers appear to be taking the payroll tax increase in stride, as spending is growing moderately.

Businesses also appear to be turning a bit more optimistic, as some indexes that measure employment, production, and new orders have firmed during the last few months<sup>3</sup>. Business leaders in my District report being pleasantly surprised by orders and activity levels so far this year.

Perhaps the best news we have received in the past few months has been about the changes in the labor market. Employment gains have essentially averaged 200,000 per month over the last five months, and this pace is certainly better than I was expecting in December. That pace is significant to me, because I would judge the outlook for labor market conditions to have improved substantially when—among other factors—I've seen a few more months of job gains at that 200,000 rate. So, if the labor market data continue to be solid, and my economic outlook remains favorable, I could then see a basis for slowing the pace of asset purchases. Even at a reduced pace, the Federal Reserve would still be adding accommodation, continuing to provide meaningful support to economic growth and job creation.

Another reason for leaning in the direction of slowing the pace of asset purchases and limiting the overall size of the program is risk management considerations. Since the onset of the financial crisis, the Federal Reserve's balance sheet has grown from \$900 billion to \$3 trillion, and it continues to grow at a rate of \$85 billion each month. Our balance sheet could reach \$4 trillion by the end of the year if it continues to expand at the current pace. This large balance sheet could present its own uncertainties and risks. The Federal Reserve has never before had a balance sheet anywhere close to the size we have today, nor has the Federal Reserve ever before taken such large positions in the Treasury and mortgage-backed securities markets. We always weigh the benefits risks of our policy options. Clearly, our asset purchases have been beneficial in increasing economic growth, lowering unemployment, and promoting price stability. However, the unusual size and nature of our asset purchases have required us to consider risk factors that do not figure so prominently during more ordinary times.

Financial stability could be harmed if financial firms take on excessive credit risk by "reaching for yield"—that is, buying riskier assets, or taking on too much leverage—in order to boost their profitability in this low-interest-rate environment. Interest rate risk could arise if financial companies are not prepared to manage the losses they might suffer by holding too many long-term, fixed-rate, low-yield assets when interest rates rise. Financial market functioning could, at some point, become distorted as a result of the Federal Reserve's large and growing presence in mortgage-backed securities and Treasury securities markets. And, should inflationary pressures emerge, there is the risk that the Federal Reserve's ability to respond could be complicated by the size and composition of our balance sheet. We have developed tools to remove monetary policy accommodation when the time comes to do so, and we have even tested them on a small scale, so that we will be ready to use them. We have planned carefully, but we are in uncharted territory. The bigger our balance sheet becomes, the less certain we can be that these new tools will achieve the results we expect.

In closing, this recovery has been a long slog, and has required far more monetary policy stimulus than I had anticipated back in early 2009, just a few months into our first round of quantitative easing.

The economy is still far from full employment of its resources, and monetary policy still needs to remain accommodative. Undoubtedly, more unforeseen developments, and risks, lie ahead. However, I would like to conclude with an emphasis on the positive. The economy appears to be on a steady, albeit moderate, growth path, and the potential risks associated with our large-scale asset purchases appear manageable at the moment. I would regard a slowing in the pace of asset purchases to be a welcome direction for monetary policy if it resulted from a significant improvement in the outlook for labor market conditions. That outcome could emerge before long, but it still remains to be seen. After all, as I have demonstrated in my remarks today, the future doesn't always turn out as one expects.

1. Bordo and Haubrich: "[Deep Recessions, Fast Recoveries, and Financial Crises: Evidence from the American Record.](#)" Working Paper 12-14, June 2012.
2. Schweitzer and Shane: "[The effect of Falling Home Prices on Small Business Borrowing.](#)" Economic Commentary 2010-18.
3. [Institute for Supply Management's Manufacturing and Nonmanufacturing Indexes.](#)