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The Federal Reserve: Looking Back, Looking Forward

Remarks by

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In less than a month my term as Fed Chairman will end. Needless to say, my tenure has been eventful--for the Federal Reserve, for the country, and for me personally. I thought it appropriate today to reflect on some accomplishments of the past eight years, as well as some uncompleted tasks. I will briefly cover three areas in my remarks: (1) the Federal Reserve's commitment to transparency and accountability, (2) financial stability and financial reform, and (3) monetary policy. I will close by discussing the prospects for the U.S. and global economies.

Transparency and Accountability

Fostering transparency and accountability at the Federal Reserve was one of my principal objectives when I became Chairman in February 2006. I had long advocated increased transparency and, in particular, a more explicit policy framework as ways to make monetary policy more predictable and more effective. Our efforts to enhance transparency and communication have indeed made monetary policy more effective, but, as I'll discuss, these steps have proved important in other spheres as well.

When I began my term I expected to build on the monetary policy framework I had inherited from Paul Volcker and Alan Greenspan. My predecessors had solidified the Fed's commitment to low and stable inflation as a foundation of broader economic stability, and they gradually increased the transparency of monetary policy deliberations and plans. For example, Chairman Volcker introduced a money-targeting framework to help guide the Fed's attack on high inflation in the early 1980s, and the practice of issuing a statement after each meeting of the Federal Open Market Committee (FOMC) began under Chairman Greenspan. I believed that a still more transparent approach would make monetary policy even more effective and further strengthen the Fed's

institutional credibility. In particular, as an academic I had written favorably about the flexible inflation-targeting approach used by the Bank of England and a number of other central banks. By making public considerable information about policy goals and strategies, together with their economic forecasts, these central banks provided a clear framework to help the public and market participants understand and anticipate policy actions. The provision of numerical goals and policy plans also helped make these central banks more accountable for achieving their stated objectives. I was confident that we could adapt this type of framework to the Federal Reserve's dual mandate to promote both maximum employment and price stability. Indeed, central banks using this framework were already, in practice, often pursuing economic objectives in addition to low and stable inflation--hence the term, "flexible" inflation targeting.

Because the financial crisis and its aftermath naturally occupied so much of policymakers' attention, progress toward a more explicit policy framework at the Federal Reserve was slower than I had hoped. Nevertheless, progress was made. In the minutes of its October 2007 meeting, the FOMC introduced its quarterly Summary of Economic Projections (SEP), which included FOMC participants' projections of key macroeconomic variables such as inflation, gross domestic product (GDP) growth, and the unemployment rate.¹ Over time, we added long-run projections of inflation, growth,

¹ Prior to October 2007, FOMC participants provided semiannual projections of nominal and real GDP, unemployment, and core inflation, which were reported in the meeting minutes and in the *Monetary Policy Report to the Congress*. The innovations associated with the introduction of the SEP included (1) the switch from semiannual to quarterly frequency, (2) the addition of projections for overall inflation (projections of nominal GDP growth were dropped), (3) the extension by two years of the projection horizon, (4) the inclusion of participants' views about the risks to and the uncertainty surrounding the outlook for each projected variable, (5) the inclusion of the full distribution of participants' projections, not just the range and central tendency, and (6) a write-up of the rationales provided by participants for their projections. As noted in the text, further innovations, including interest rate projections and long-run projections of economic growth, unemployment, inflation, and the federal funds rate were added over time. The role of the projections in policy communication was also significantly increased after October

and unemployment, as well as projections of the path of the target federal funds rate consistent with each individual's views of appropriate monetary policy. These additions have better informed the public about participants' views on both the long-run objectives of policy and the path of interest rates most consistent with achieving those objectives.

We took another important step in January 2012, when the FOMC issued a statement laying out its longer-run goals and policy strategy.² The statement established, for the first time, an explicit longer-run goal for inflation of 2 percent, and it pointed to the SEP to provide information about Committee participants' assessments of the longer-run normal unemployment rate, currently between 5.2 and 6 percent. The statement also indicated that the Committee would take a balanced approach to its price stability and employment objectives. We adopted additional measures aimed at clarifying the rationales for our decisions, including my quarterly postmeeting press conference. The increases in policy transparency that were achieved proved valuable during a very difficult period for monetary policy.

As it happened, during the crisis and its aftermath the Federal Reserve's transparency and accountability proved critical in a quite different sphere--namely, in supporting the institution's democratic legitimacy. The Federal Reserve, like other central banks, wields powerful tools; democratic accountability requires that the public be able to see how and for what purposes those tools are being used. Transparency is particularly important in a period like the recent one in which the Federal Reserve has been compelled to take unusual and dramatic actions--including the provision of liquidity

2007; for example, they were regularly referenced in the Chairman's semiannual Humphrey-Hawkins testimony before the Congress (see Board of Governors, 2007a, 2007b).

² See Board of Governors (2012b).

to a wide range of financial institutions and markets that did not normally have access to the Fed's discount window--to help stabilize the financial system and the economy.

What types of transparency are needed to preserve public confidence? At the most basic level, a central bank must be clear and open about its actions and operations, particularly when they involve the deployment of public funds. The Federal Reserve routinely makes public extensive information on all aspects of its activities, and since the crisis it has greatly increased the quantity and detail of its regular reports to the Congress and the public.³ Importantly, contrary to what is sometimes asserted, all of the Fed's financial transactions and operations are subject to regular, intensive audits--by the Government Accountability Office, an independent Inspector General, and a private accounting firm, as well as by our own internal auditors.⁴ It is a testament to the dedication of the Federal Reserve's management team that these thorough audits have consistently produced assessments of the Fed's accounting and financial controls that most public companies would envy.

³ For example, the Board has regularly published detailed information about the Federal Reserve's balance sheet and the special liquidity facilities that were introduced during the crisis. We created a section on our website devoted to these issues and initiated a regular public report as well. (See the webpage "Credit and Liquidity Programs and the Balance Sheet" at www.federalreserve.gov/monetarypolicy/bst.htm.)

⁴ While the Government Accountability Office (GAO) has access to all aspects of the Fed's operations and is free to criticize or make recommendations, there is one important exception: monetary policymaking. In the 1970s, the Congress deliberately excluded monetary policy deliberations, decisions, and actions from the scope of GAO reviews. In doing so, the Congress carefully balanced the need for democratic accountability with the benefits that flow from keeping monetary policy free from short-term political pressures.

However, there have been recent proposals (so-called Audit the Fed measures) to expand the authority of the GAO over the Federal Reserve to include reviews of monetary policy decisions. Because the GAO is the investigative arm of the Congress and GAO reviews may be initiated at the request of members of the Congress, these reviews (or the prospect of reviews) of individual policy decisions could be seen, with good reason, as efforts to bring political pressure to bear on monetary policymakers. A perceived politicization of monetary policy would reduce public confidence in the ability of the Federal Reserve to make its policy decisions based strictly on what is good for the economy in the longer term. Balancing the need for accountability against the goal of insulating monetary policy from short-term political pressures is very important, and I believe that the Congress had it right in the 1970s when it explicitly chose to protect monetary policy decisionmaking from the possibility of politically motivated reviews.

Transparency and accountability are about more than just opening up the books, however; they also require thoughtful explanations of what we are doing and why. In this regard, our first responsibility is to the Congress, which established the Federal Reserve almost exactly a century ago and determined its structure, objectives, and powers. Federal Reserve Board members, including the Chairman, of course, as well as senior staff, testify frequently before congressional committees on a wide range of topics. When I became Chairman, I anticipated the obligation to appear regularly before the Congress. I had not entirely anticipated, though, that I would spend so much time meeting with legislators outside of hearings--individually and in groups. But I quickly came to realize the importance of these relationships with legislators in keeping open the channels of communication. As part of the Fed's interaction with the Congress, we have also routinely provided staff briefings on request and conducted programs at the Board for the benefit of congressional staff interested in Federal Reserve issues. I likewise maintained regular contact with both the Bush and Obama Administrations, principally through meetings with the Secretary of the Treasury and other economic officials.

The crisis and its aftermath, however, raised the need for communication and explanation by the Federal Reserve to a new level. We took extraordinary measures to meet extraordinary economic challenges, and we had to explain those measures to earn the public's support and confidence. Talking only to the Congress and to market participants would not have been enough. The effort to inform the public engaged the whole institution, including both Board members and the staff. As Chairman, I did my part, by appearing on television programs, holding town halls, taking student questions at universities, and visiting a military base to talk to soldiers and their families. The Federal

Reserve Banks also played key roles in providing public information in their Districts, through programs, publications, speeches, and other media.

The crisis has passed, but I think the Fed's need to educate and explain will only grow. When Paul Volcker first sat in the Chairman's office in 1979, there were no financial news channels on cable TV, no Bloomberg screens, no blogs, no Twitter. Today, news, ideas, and rumors circulate almost instantaneously. The Fed must continue to find ways to navigate this changing environment while providing clear, objective, and reliable information to the public.

Financial Stability

For the U.S. and global economies, the most important event of the past eight years was, of course, the global financial crisis and the deep recession that it triggered. As I have observed on other occasions, the crisis bore a strong family resemblance to a classic financial panic, except that it took place in the complex environment of the 21st century global financial system.⁵ Likewise, the tools used to fight the panic, though adapted to the modern context, were analogous to those that would have been used a century ago, including liquidity provision by the central bank, liability guarantees, recapitalization, and the provision of assurances and information to the public.

The immediate trigger of the crisis, as you know, was a sharp decline in house prices, which reversed a previous run-up that had been fueled by irresponsible mortgage lending and securitization practices. Policymakers at the time, including myself, certainly appreciated that house prices might decline, although we disagreed about how much decline was likely; indeed, prices were already moving down when I took office in 2006. However, to a significant extent, our expectations about the possible

⁵ For more on the recent financial crisis as a classic financial panic, see Bernanke (2013).

macroeconomic effects of house price declines were shaped by the apparent analogy to the bursting of the dot-com bubble a few years earlier. That earlier bust also involved a large reduction in paper wealth but was followed by only a mild recession. In the event, of course, the bursting of the housing bubble helped trigger the most severe financial crisis since the Great Depression. It did so because, unlike the earlier decline in equity prices, it interacted with critical vulnerabilities in the financial system and in government regulation that allowed what were initially moderate aggregate losses to subprime mortgage holders to cascade through the financial system. In the private sector, key vulnerabilities included high levels of leverage, excessive dependence on unstable short-term funding, deficiencies in risk measurement and management, and the use of exotic financial instruments that redistributed risk in nontransparent ways. In the public sector, vulnerabilities included gaps in the regulatory structure that allowed some systemically important firms and markets to escape comprehensive supervision, failures of supervisors to effectively use their existing powers, and insufficient attention to threats to the stability of the system as a whole.

The Federal Reserve responded forcefully to the liquidity pressures during the crisis in a manner consistent with the lessons that central banks had learned from financial panics over more than 150 years and summarized in the writings of the 19th century British journalist Walter Bagehot: Lend early and freely to solvent institutions.⁶ However, the institutional context had changed substantially since Bagehot wrote. The panics of the 19th and early 20th centuries typically involved runs on commercial banks and other depository institutions. Prior to the recent crisis, in contrast, credit extension

⁶ As noted in *Lombard Street*, by Bagehot ([1873] 1897). For a more extensive discussion of the manner in which the Federal Reserve's actions during the crisis followed traditional prescriptions regarding the proper response to liquidity strains, see Madigan (2009).

had progressively migrated outside of traditional banking to so-called shadow banking entities, which relied heavily on short-term wholesale funding that proved vulnerable to runs.⁷ Accordingly, to help calm the panic, the Federal Reserve provided liquidity not only to commercial banks, but also to other types of financial institutions such as investment banks and money market funds, as well as to key financial markets such as those for commercial paper and asset-backed securities.⁸ Because funding markets are global in scope and U.S. borrowers depend importantly on foreign lenders, the Federal Reserve also approved currency swap agreements with 14 foreign central banks.

Providing liquidity represented only the first step in stabilizing the financial system. Subsequent efforts focused on rebuilding the public's confidence, notably including public guarantees of bank debt by the Federal Deposit Insurance Corporation and of money market funds by the Treasury Department, as well as the injection of public capital into banking institutions. The bank stress test that the Federal Reserve led in the spring of 2009, which included detailed public disclosure of information regarding the solvency of our largest banks, further buttressed confidence in the banking system. The success of the stress-test disclosures, by the way, was yet another example of the benefits of transparency.

⁷ Shadow banking, as usually defined, comprises a diverse set of institutions and markets that, collectively, carry out traditional banking functions--but do so outside, or in ways only loosely linked to, the traditional system of regulated depository institutions. Examples of important components of the shadow banking system include securitization vehicles, asset-backed commercial paper conduits, money market funds, markets for repurchase agreements, investment banks, and nonbank mortgage companies.

⁸ Liquidity tools employed by the Federal Reserve that were closely tied to the central bank's traditional role as lender of last resort involved the provision of short-term liquidity to depository and other financial institutions and included the traditional discount window, the Term Auction Facility (TAF), the Primary Dealer Credit Facility (PDCF), and the Term Securities Lending Facility (TSLF). A second set of tools involved the provision of liquidity directly to borrowers and investors in those credit markets key to households and businesses where the expanding crisis threatened to materially impede the availability of financing. The Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), the Commercial Paper Funding Facility (CPFF), the Money Market Investor Funding Facility (MMIFF), and the Term Asset-Backed Securities Loan Facility (TALF) fall into this category.

The subsequent efforts to reform our regulatory framework have been focused on limiting the reemergence of the vulnerabilities that precipitated and exacerbated the crisis. Changes in bank capital regulation under Basel III have significantly increased requirements for loss-absorbing capital at global banking firms--including a surcharge for systemically important institutions and a ceiling on leverage. The Federal Reserve's Comprehensive Capital Analysis and Review, or CCAR, process, a descendant of the 2009 stress test, requires that large financial institutions maintain sufficient capital to weather extreme shocks, and that they demonstrate that their internal planning processes are effective; in addition, public disclosure of the results facilitates market discipline. The Basel III framework also includes liquidity requirements designed to mitigate excessive reliance by global banks on short-term wholesale funding and to otherwise constrain risks at those banks. Further steps are under way to toughen the oversight of large institutions and to strengthen the financial infrastructure, for example, by requiring central clearing with greater transparency for the trading of most standardized derivatives.

Oversight of the shadow banking system also has been strengthened. For example, the new Financial Stability Oversight Council has designated some nonbank firms as systemically important financial institutions, or SIFIs, subject to consolidated supervision by the Federal Reserve. In addition, measures are being undertaken to address the potential instability of short-term wholesale funding markets, including reforms to money market funds and the triparty repo market.⁹

Of course, in a highly integrated global financial system, no country can effectively implement the financial reforms I have described in isolation. The good news

⁹ For a more comprehensive discussion of changes in the regulatory framework, see Tarullo (2013).

is that similar reforms are being pursued throughout the world, with the full support of the United States and with international bodies such as the Basel Committee and the Financial Stability Board providing coordination.

More broadly, the approach to regulation and supervision at the Federal Reserve has evolved to include a substantial macroprudential, or systemic, orientation in addition to the traditional focus on individual institutions. For example, the Federal Reserve created the Office of Financial Stability Policy and Research, which coordinates System efforts to monitor the interaction of financial institutions, financial markets, and economic developments to identify emerging vulnerabilities and systemic risks.¹⁰ Enhanced monitoring of this type is especially important as the changes in regulatory structure and financial innovation may lead risks to manifest in new ways or to migrate outside the perimeter of the current regulatory structure.

Much progress has been made, but more remains to be done. In addition to completing the efforts I have already mentioned, including the full implementation of new rules and supervisory responsibilities, the agenda still includes further domestic and international cooperation to ensure the effectiveness of mechanisms to allow the orderly resolution of insolvent institutions and thereby increase market discipline on large institutions.¹¹ The evaluation of potential macroprudential tools that might be used to address emerging financial imbalances is another high priority. For example, the new Basel III regulatory capital framework includes a countercyclical capital buffer, which may help build additional resilience within the financial sector during periods of buoyant

¹⁰ This monitoring framework is discussed in, for example, Adrian, Covitz, and Liang (2013).

¹¹ The Dodd-Frank Act, under the orderly liquidation authority in Title II, created an alternative resolution mechanism for SIFIs that takes into account both the need, for moral hazard reasons, to impose costs on the creditors of failing firms and the need to protect financial stability; the Federal Deposit Insurance Corporation, with the cooperation of the Federal Reserve, has been hard at work fleshing out this authority.

credit creation. Staff members are investigating the potential of this and other regulatory tools, such as cyclically sensitive loan-to-value requirements for mortgages, to improve financial stability. A number of countries, including both advanced and emerging-market economies, have already deployed such measures, and their experiences should be instructive. Although, in principle, monetary policy can be used to address financial imbalances, the presumption remains that macroprudential tools, together with well-focused traditional regulation and supervision, should serve as the first line of defense against emerging threats to financial stability. However, more remains to be done to better understand how to design and implement more effective macroprudential tools and how these tools interact with monetary policy.

Monetary Policy

While liquidity provision and other emergency steps were critical to stemming the financial panic, a rapid shift in the stance of monetary policy was necessary to counteract the massive economic blow delivered by the crisis. The FOMC reduced the target federal funds rate from 5-1/4 percent in the summer of 2007 to a range of 0 to 1/4 percent by the end of 2008, a very rapid easing. The federal funds rate has been at its effective lower bound since then.

To provide additional monetary policy accommodation despite the constraint imposed by the effective lower bound on interest rates, the Federal Reserve turned to two alternative tools: enhanced forward guidance regarding the likely path of the federal funds rate and large-scale purchases of longer-term securities for the Federal Reserve's portfolio. Other major central banks have responded to developments since 2008 in roughly similar ways. For example, the Bank of England and the Bank of Japan have

employed detailed forward guidance and conducted large-scale asset purchases, while the European Central Bank has moved to reduce the perceived risk of sovereign debt, provided banks with substantial liquidity, and offered qualitative guidance regarding the future path of interest rates.

With short-term rates near zero, expanded guidance about intentions for future policy has helped to shape market expectations, which in turn has eased financial conditions by putting downward pressure on longer-term interest rates and helped support economic activity. Forward guidance about the short-term interest rate supplements the broader policy framework I described earlier, by providing information about how the Committee expects to achieve its stated policy objectives despite the complications created by the zero lower bound on the policy interest rate and uncertainties about the costs and efficacy of the available policy tools. Beginning with qualitative guidance, the Committee's communication about its anticipated future policy has evolved through several stages. In December 2012, the Committee introduced state-contingent guidance, announcing for the first time that no increase in the federal funds rate target should be anticipated so long as unemployment remained above 6-1/2 percent, inflation between one and two years ahead was projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continued to be well anchored.¹² My colleagues and I emphasized that the conditions stated in that guidance were thresholds, not triggers. That is, crossing one of the thresholds would not automatically give rise to an increase in the federal funds rate target; instead, it would signal only that it would be appropriate for the Committee to

¹² See Board of Governors (2012a) for the statement that introduced the state-contingent guidance.

begin considering, based on a wider range of indicators, whether and when an increase in the target might be warranted.

Large-scale asset purchases also provide monetary accommodation by lowering long-term interest rates. Working through the portfolio-balance channel, asset purchases reduce the supply of long-duration assets in the hands of the public, depressing term premiums and thus reducing longer-term yields. At times, the decision to begin or extend an asset-purchase program may also have a signaling effect, to the extent that market participants see that decision as indicative of policymakers' commitment to an accommodative policy stance. However, it is important to recognize that the potential signaling aspect of asset purchases depends on the broader economic and policy context. In particular, the FOMC's decision to modestly reduce the pace of asset purchases at its December meeting did not indicate any diminution of its commitment to maintain a highly accommodative monetary policy for as long as needed; rather, it reflected the progress we have made toward our goal of substantial improvement in the labor market outlook that we set out when we began the current purchase program in September 2012. At its most recent meeting, the Committee reaffirmed and clarified its guidance on rates, stating that it expects to maintain the current target range for the federal funds rate well past the time that the unemployment threshold of 6-1/2 percent is crossed, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal.¹³

Have these unconventional tools been effective? Skeptics have pointed out that the pace of recovery has been disappointingly slow, with inflation-adjusted GDP growth averaging only slightly higher than a 2 percent annual rate over the past few years and inflation below the Committee's 2 percent longer-term target. However, as I will discuss,

¹³ For the most recent FOMC statement, see Board of Governors (2013).

the recovery has faced powerful headwinds, suggesting that economic growth might well have been considerably weaker, or even negative, without substantial monetary policy support. For the most part, research supports the conclusion that the combination of forward guidance and large-scale asset purchases has helped promote the recovery. For example, changes in guidance appear to shift interest rate expectations, and the preponderance of studies show that asset purchases push down longer-term interest rates and boost asset prices.¹⁴ These changes in financial conditions in turn appear to have provided material support to the economy.¹⁵

Once the economy improves sufficiently so that unconventional tools are no longer needed, the Committee will face issues of policy implementation and, ultimately, the design of the policy framework. Large-scale asset purchases have increased the size of our balance sheet and created substantial excess reserves in the banking system. Under the operating procedures used prior to the crisis, the presence of large quantities of excess reserves likely would have impeded the FOMC's ability to raise short-term nominal interest rates when appropriate. However, the Federal Reserve now has effective tools to normalize the stance of policy when conditions warrant, without reliance on asset sales. The interest rate on excess reserves can be raised, which will put upward pressure on short-term rates; in addition, the Federal Reserve will be able to employ other tools, such as fixed-rate overnight reverse repurchase agreements, term deposits, or term

¹⁴ There is a substantial recent research literature that has tried to quantify the effects of balance sheet policies on asset pricing. For example, see D'Amico and King (2013) and Krishnamurthy and Vissing-Jorgenson (2011). Research on the effects on mortgage rates includes Hancock and Passmore (2011). Research on the effects on corporate bond yields includes Gilchrist and Zakrajšek (2013) and Kiley (2013); Kiley (forthcoming b) examines the effects on U.S. equity prices. For a recent study of the effectiveness of forward guidance, see Femia, Friedman, and Sack (2013).

¹⁵ The range of macroeconomic frameworks used to judge the effects of these policy actions reflects the diversity of views within the profession of how to model the relevant empirical links, for example, Chung and others (2012); Fuhrer and Olivei (2011); Chen, Cúrdia, and Ferrero (2012); and Kiley (forthcoming a).

repurchase agreements, to drain bank reserves and tighten its control over money market rates if this proves necessary. As a result, at the appropriate time, the FOMC will be able to return to conducting monetary policy primarily through adjustments in the short-term policy rate. It is possible, however, that some specific aspects of the Federal Reserve's operating framework will change; the Committee will be considering this question in the future, taking into account what it learned from its experience with an expanded balance sheet and new tools for managing interest rates.

Economic Prospects

In the remainder of my remarks, I will reflect on the state of the U.S. economic recovery and its prospects.

The economy has made considerable progress since the recovery officially began some four and a half years ago. Payroll employment has risen by 7-1/2 million jobs from its trough. Real GDP has grown in 16 of 17 quarters, and the level of real GDP in the third quarter of 2013 was 5-1/2 percent above its pre-recession peak. The unemployment rate has fallen from 10 percent in the fall of 2009 to 7 percent recently. Industrial production and equipment investment have matched or exceeded pre-recession peaks. The banking system has been recapitalized, and the financial system is safer. When the economy was in free fall in late 2008 and early 2009, such improvement was far from certain, as indicated at the time by stock prices that were nearly 60 percent below current levels and very wide credit spreads.

Despite this progress, the recovery clearly remains incomplete. At 7 percent, the unemployment rate still is elevated. The number of long-term unemployed remains unusually high, and other measures of labor underutilization, such as the number of

people who are working part time for economic reasons, have improved less than the unemployment rate. Labor force participation has continued to decline, and, although some of this decline reflects longer-term trends that were in place prior to the crisis, some of it likely reflects potential workers' discouragement about job prospects.

In retrospect, at least, many of the factors that held back the recovery can be identified. Some of these factors were difficult or impossible to anticipate, such as the resurgence in financial volatility associated with the European sovereign debt and banking crisis and the economic effects of natural disasters in Japan and elsewhere. Other factors were more predictable; in particular, we appreciated early on, though perhaps to a lesser extent than we might have, that the boom and bust left severe imbalances that would take time to work off. As Carmen Reinhart and Ken Rogoff noted in their prescient research, economic activity following financial crises tends to be anemic, especially when the preceding economic expansion was accompanied by rapid growth in credit and real estate prices.¹⁶ Weak recoveries from financial crises reflect, in part, the process of deleveraging and balance sheet repair: Households pull back on spending to recoup lost wealth and reduce debt burdens, while financial institutions restrict credit to restore capital ratios and reduce the riskiness of their portfolios. In addition to these financial factors, the weakness of the recovery reflects the overbuilding of housing (and, to some extent, commercial real estate) prior to the crisis, together with tight mortgage credit; indeed, recent activity in these areas is especially tepid in comparison to the rapid gains in construction more typically seen in recoveries.

Although the Federal Reserve, like other forecasters, has tended to be overoptimistic in its forecasts of real GDP during this recovery, we have also, at times,

¹⁶ For example, see Reinhart and Rogoff (2009). See also Howard, Martin, and Wilson (2011).

been too pessimistic in our forecasts of the unemployment rate. For example, over the past year unemployment has declined notably more quickly than we or other forecasters expected, even as GDP growth was moderately lower than expected a year ago. This discrepancy reflects a number of factors, including declines in participation, but an important reason is the slow growth of productivity during this recovery; intuitively, when productivity gains are limited, firms need more workers even if demand is growing slowly. Disappointing productivity growth accordingly must be added to the list of reasons that economic growth has been slower than hoped.¹⁷ (Incidentally, the slow pace of productivity gains early in the recovery was not evident until well after the fact because of large data revisions--an illustration of the frustrations of real-time policymaking.) The reasons for weak productivity growth are not entirely clear: It may be a result of the severity of the financial crisis, for example, if tight credit conditions have inhibited innovation, productivity-improving investments, and the formation of new firms; or it may simply reflect slow growth in sales, which have led firms to use capital and labor less intensively, or even mismeasurement. Notably, productivity growth has also flagged in a number of foreign economies that were hard-hit by the financial crisis. Yet another possibility is weak productivity growth reflects longer-term trends largely unrelated to the recession. Obviously, the resolution of the productivity puzzle will be important in shaping our expectations for longer-term growth.

To this list of reasons for the slow recovery--the effects of the financial crisis, problems in the housing and mortgage markets, weaker-than-expected productivity growth, and events in Europe and elsewhere--I would add one more significant factor--

¹⁷ For a review of some of this recent literature, see Reifschneider, Wascher, and Wilcox (2013). Other recent research on potential growth includes De Michelis, Estevão, and Wilson (2013) and Haltmaier (2012).

namely, fiscal policy. Federal fiscal policy was expansionary in 2009 and 2010.¹⁸ Since that time, however, federal fiscal policy has turned quite restrictive; according to the Congressional Budget Office, tax increases and spending cuts likely lowered output growth in 2013 by as much as 1-1/2 percentage points. In addition, throughout much of the recovery, state and local government budgets have been highly contractionary, reflecting their adjustment to sharply declining tax revenues. To illustrate the extent of fiscal tightness, at the current point in the recovery from the 2001 recession, employment at all levels of government had increased by nearly 600,000 workers; in contrast, in the current recovery, government employment has declined by more than 700,000 jobs, a net difference of more than 1.3 million jobs. There have been corresponding cuts in government investment, in infrastructure for example, as well as increases in taxes and reductions in transfers.

Although long-term fiscal sustainability is a critical objective, excessively tight near-term fiscal policies have likely been counterproductive. Most importantly, with fiscal and monetary policy working in opposite directions, the recovery is weaker than it otherwise would be. But the current policy mix is particularly problematic when interest rates are very low, as is the case today. Monetary policy has less room to maneuver when interest rates are close to zero, while expansionary fiscal policy is likely both more effective and less costly in terms of increased debt burden when interest rates are pinned at low levels. A more balanced policy mix might also avoid some of the costs of very low interest rates, such as potential risks to financial stability, without sacrificing jobs and growth.

¹⁸ For analysis of fiscal effects, see Congressional Budget Office (2013).

I have discussed the factors that have held back the recovery, not only to better understand the recent past but also to think about the economy's prospects. The encouraging news is that the headwinds I have mentioned may now be abating. Near-term fiscal policy at the federal level remains restrictive, but the degree of restraint on economic growth seems likely to lessen somewhat in 2014 and even more so in 2015; meanwhile, the budgetary situations of state and local governments have improved, reducing the need for further sharp cuts. The aftereffects of the housing bust also appear to have waned. For example, notwithstanding the effects of somewhat higher mortgage rates, house prices have rebounded, with one consequence being that the number of homeowners with "underwater" mortgages has dropped significantly, as have foreclosures and mortgage delinquencies. Household balance sheets have strengthened considerably, with wealth and income rising and the household debt-service burden at its lowest level in decades. Partly as a result of households' improved finances, lending standards to households are showing signs of easing, though potential mortgage borrowers still face impediments. Businesses, especially larger ones, are also in good financial shape. The combination of financial healing, greater balance in the housing market, less fiscal restraint, and, of course, continued monetary policy accommodation bodes well for U.S. economic growth in coming quarters. But, of course, if the experience of the past few years teaches us anything, it is that we should be cautious in our forecasts.

What about the rest of the world? The U.S. recovery appears to be somewhat ahead of those of most other advanced industrial economies; for example, real GDP is still slightly below its pre-recession peak in Japan and remains 2 percent and 3 percent

below pre-recession peaks in the United Kingdom and the euro area, respectively. Nevertheless, I see some grounds for cautious optimism abroad as well. As in the United States, central banks in other advanced economies have taken significant steps to strengthen financial systems and to provide policy accommodation. Financial-sector reform is proceeding, and the contractionary effects of tight fiscal policies are waning. Although difficult reforms--such as banking and fiscal reform in Europe and structural reform in Japan--are still in early stages, we have also seen indications of better growth in the advanced economies, which should have positive implications for the United States. Emerging market economies have also grown somewhat more quickly lately after a slowing in the first half of 2013. Although growth prospects for the emerging markets continue to be good, here too the extent and effectiveness of structural reforms, like those currently under way in China and Mexico, will be critical factors.

Conclusion

Last month we had a ceremony at the Board to commemorate the centennial of the signing of the Federal Reserve Act by President Woodrow Wilson. Over its 100 years of existence, the Fed has faced numerous economic and financial challenges. Certainly the past few years will rank among some of the more difficult for the U.S. economy and for the Fed. The experience has led to important changes at our institution, including new monetary policy tools, enhanced policy communication, a substantial increase in the institutional focus on financial stability and macroprudential policy, and increased transparency.

We often speak of the Federal Reserve or other institutions as if they were autonomous actors. Of course, they are not. The Fed is made up of people, working

within an organizational structure and with an institutional culture and set of values. I am very proud of my colleagues at the Fed for the hard work and creativity they have brought to bear in addressing the financial and economic crisis, and I think we and they have been well served by a culture that emphasizes objective, expert analysis; professionalism; dedication; and independence from political influence. Whatever the Fed may have achieved in recent years reflects the efforts of many people who are committed, individually and collectively, to pursuing the public interest. Although the Fed undoubtedly will face some difficult challenges in the years ahead, our people and our values make me confident that our institution will meet those challenges successfully.

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