# Ben S Bernanke: A century of US central banking – goals, frameworks, accountability

Speech by Mr Ben S Bernanke, Chairman of the Board of Governors of the Federal Reserve System, at "The First 100 Years of the Federal Reserve: The Policy Record, Lessons Learned, and Prospects for the Future," a conference sponsored by the National Bureau of Economic Research, Cambridge, Massachusetts, 10 July 2013.

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I'd like to thank the National Bureau of Economic Research for organizing this conference in recognition of the Federal Reserve's centennial, and I'm glad to have the opportunity to participate. In keeping with the spirit of the conference, my remarks today will take a historical perspective. I will leave discussion of current policy to today's question-and-answer session and, of course, to my congressional testimony next week.

Today, I'll discuss the evolution over the past 100 years of three key aspects of Federal Reserve policymaking: the goals of policy, the policy framework, and accountability and communication. The changes over time in these three areas provide a useful perspective, I believe, on how the role and functioning of the Federal Reserve have changed since its founding in 1913, as well as some lessons for the present and for the future. I will pay particular attention to several key episodes of the Fed's history, all of which have been referred to in various contexts with the adjective "Great" attached to them: the Great Experiment of the Federal Reserve's founding, the Great Depression, the Great Inflation and subsequent disinflation, the Great Moderation, and the recent Great Recession.

### The Great Experiment

In the words of one of the authors of the Federal Reserve Act, Robert Latham Owen, the Federal Reserve was established to "provide a means by which periodic panics which shake the American Republic and do it enormous injury shall be stopped."[1] In short, the original goal of the Great Experiment that was the founding of the Fed was the preservation of financial stability.[2] At the time, the standard view of panics was that they were triggered when the needs of business and agriculture for liquid funds outstripped the available supply – as when seasonal plantings or shipments of crops had to be financed, for example – and that panics were further exacerbated by the incentives of banks and private individuals to hoard liquidity during such times.[3] The new institution was intended to relieve such strains by providing an "elastic" currency – that is, by providing liquidity as needed to individual member banks through the discount window; commercial banks, in turn, would then be able to accommodate their customers. Interestingly, although congressional advocates hoped the creation of the Fed would help prevent future panics, they did not fully embrace the idea that the Fed should help end ongoing panics by serving as lender of last resort, as had been

1 See Owen (1919, p. 24). The Treasury carried out some central banking functions before the creation of the Federal Reserve. In addition, the United States had experimented with central banking before, with the First and Second Banks of the United States. By 1913, however, it had been about 75 years since the latter institution had ceased fulfilling that purpose. Moreover, the Federal Reserve operated somewhat differently from the prior institutions, and, in that respect, its creation amounted to an experiment.

2 Per a review of the 1929 book *Wall Street and Washington* in the *New York Times*, "The Federal Reserve System has from the first necessarily been a great experiment, bound to adjust its general policies to the requirements of such novel and varying situations as should arise in the course of our financial history and which could not possibly be foreseen" (Noyes, 1929).

3 Friedman and Schwartz (1963) describe the debate about the elastic currency. Warburg (1914) discusses hoarding and the panic dynamics that the Federal Reserve was established to prevent.

recommended by the British economist and writer Walter Bagehot.[4] Legislators imposed limits on the Federal Reserve's ability to lend in response to panics, for example, by denying nonmember banks access to the discount window and by restricting the types of collateral that the Fed could accept.[5]

The framework that the Federal Reserve employed in its early years to promote financial stability reflected in large measure the influence of the so-called real bills doctrine, as well as the fact that the United States was on the gold standard.[6] In the framework of the real bills doctrine, the Federal Reserve saw its function as meeting the needs of business for liquidity – consistent with the idea of providing an elastic currency – with the ultimate goal of supporting financial and economic stability.[7] When business activity was increasing, the Federal Reserve helped accommodate the need for credit by supplying liquidity to banks; when business was contracting and less credit was needed, the Fed reduced the liquidity in the system.

As I mentioned, the Federal Reserve pursued this approach to policy in the context of the gold standard. Federal Reserve notes were redeemable in gold on demand, and the Fed was required to maintain a gold reserve equal to 40 percent of outstanding notes. However, contrary to the principles of an idealized gold standard, the Federal Reserve often took actions to prevent inflows and outflows of gold from being fully translated into changes in the domestic money supply.[8] This practice, together with the size of the U.S. economy, gave the Federal Reserve considerable autonomy in monetary policy and, in particular, allowed the Fed to conduct policy according to the real bills doctrine without much hindrance.

The policy framework of the Fed's early years has been much criticized in retrospect. Although the gold standard did not appear to have greatly constrained U.S. monetary policy in the years after the Fed's founding, subsequent research has highlighted the extent to which the international gold standard served to destabilize the global economy in the late 1920s and early 1930s.[9] Likewise, economic historians have pointed out that, under the real bills doctrine, the Fed increased the money supply precisely at those times at which business activity and upward pressures on prices were strongest; that is, monetary policy was procyclical. Thus, the Fed's actions tended to increase rather than decrease the volatility in economic activity and prices.[10]

During this early period, the new central bank did make an important addition to its menu of policy tools. Initially, the Fed's main tools were the quantity of its lending through the discount

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4 See Willis (1923, p. 1407), Carlson and Wheelock (2012), and Bordo and Wheelock (2013). Bagehot ([1873] 1897) is the source of the classic dictum that a panic should be addressed by the central bank, by lending freely at a penalty rate.

5 The Monetary Control Act of 1980 gave all depository institutions access to the discount window. The collateral acceptable to be pledged to the discount window has been expanded significantly over time; in particular, various pieces of banking legislation in the early 1930s enabled the Federal Reserve to make advances to member banks so long as the loans were "secured to the satisfaction" of the Federal Reserve Bank extending the loan.

6 See Humphrey (1982) for a discussion of the historical evolution of the real bills doctrine.

7 This interpretation follows from the discussion in the *Tenth Annual Report of the Federal Reserve Board* (Board of Governors, 1924). Soon after the Federal Reserve was founded, its mission shifted to supporting the war effort and then to managing the unwinding of that support. The year 1923 was thus one of the first in which the Federal Reserve confronted normal peacetime financial conditions, and it took the opportunity to articulate its views on the appropriate conduct of policy in such conditions.

8 The Federal Reserve could undo the effects of gold inflows on the domestic money supply through open market operations, discussed later.

9 See, for example, Eichengreen (1992).

10 See Friedman and Schwartz (1963), Humphrey (1982), and Meltzer (2003).

window and the interest rate at which it lent, the discount rate. Early on, however, to generate earnings to finance its operations, the Federal Reserve began purchasing government securities in the open market – what came to be known as open market operations. In the early 1920s, Fed officials discovered that these operations affected the supply and cost of bank reserves and, consequently, the terms on which banks extended credit to their customers. Subsequently, of course, open market operations became a principal monetary policy tool, one that allowed the Fed to interact with the broader financial markets, not only with banks.[11]

I've discussed the original mandate and early policy framework of the Fed. What about its accountability to the public? As this audience knows, when the Federal Reserve was established, the question of whether it should be a private or a public institution was highly contentious. The compromise solution created a hybrid Federal Reserve System. The System was headed by a governmentally appointed Board, which initially included the Secretary of the Treasury and the Comptroller of the Currency. But the 12 regional Reserve Banks were placed under a mixture of public and private oversight, including board members drawn from the private sector, and they were given considerable scope to make policy decisions that applied to their own Districts. For example, Reserve Banks were permitted to set their own discount rates, subject to a minimum set by the Board.

While the founders of the Federal Reserve hoped that this new institution would provide financial and hence economic stability, the policy framework and the institutional structure would prove inadequate to the challenges the Fed would soon face.

**The Great Depression**

The Great Depression was the Federal Reserve's most difficult test. Tragically, the Fed failed to meet its mandate to maintain financial stability. In particular, although the Fed provided substantial liquidity to the financial system following the 1929 stock market crash, its response to the subsequent banking panics was limited at best; the widespread bank failures and the collapse in money and credit that ensued were major sources of the economic downturn.[12] Bagehot's dictum to lend freely at a penalty rate in the face of panic appeared to have few adherents at the Federal Reserve of that era.[13]

Economists have also identified a number of instances from the late 1920s to the early 1930s when Federal Reserve officials, in the face of the sharp economic contraction and financial upheaval, either tightened monetary policy or chose inaction. Some historians trace these policy mistakes to the early death of Benjamin Strong, governor of the Federal Reserve Bank of New York, in 1928, which left the decentralized system without an effective leader.[14] Whether valid or not, this hypothesis raises the interesting question of what intellectual framework an effective leader would have drawn on at the time to develop and justify a more activist monetary policy. The degree to which the gold standard actually constrained U.S. monetary policy during the early 1930s is debated; but the gold standard philosophy clearly did not encourage the sort of highly expansionary policies that were needed.[15] The same can

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[11] See Strong (1926).

[12] See Friedman and Schwartz (1963).

[13] Meltzer (2003, pp. 282, 729–30) notes that Board members discussed Bagehot's ideas but nevertheless did not integrate them fully into their approach to policy.

[14] See Friedman and Schwartz (1963, chapter 7).

[15] Wicker (1965), Temin (1989), and Eichengreen (1992) suggest that U.S. policymakers felt constrained by the gold standard. In contrast, Hsieh and Romer (2006), as well as Bordo, Choudhri, and Schwartz (2002), focus on the short-lived monetary expansion in 1932 as evidence against the existence of important constraints on the Federal Reserve.

be said for the real bills doctrine, which apparently led policymakers to conclude, on the basis of low nominal interest rates and low borrowings from the Fed, that monetary policy was appropriately supportive and that further actions would be fruitless.[16] Historians have also noted the prevalence at the time of yet another counterproductive doctrine: the so-called liquidationist view, that depressions perform a necessary cleansing function.[17] It may be that the Federal Reserve suffered less from lack of leadership in the 1930s than from the lack of an intellectual framework for understanding what was happening and what needed to be done.

The Fed's inadequate policy frameworks ultimately collapsed under the weight of economic failures, new ideas, and political developments. The international gold standard was abandoned during the 1930s. The real bills doctrine likewise lost prestige after the disaster of the 1930s; for example, the Banking Act of 1935 instructed the Federal Reserve to use open market operations with consideration of "the general credit situation of the country," not just to focus narrowly on short-term liquidity needs.[18] The Congress also expanded the Fed's ability to provide credit through the discount window, allowing loans to a broader array of counterparties, secured by a broader variety of collateral.[19]

The experience of the Great Depression had major ramifications for all three aspects of the Federal Reserve I am discussing here: its goals, its policy framework, and its accountability to the public. With respect to goals, the high unemployment of the Depression – and the fear that high unemployment would return after World War II – elevated the maintenance of full employment as a goal of macroeconomic policy. The Employment Act of 1946 made the promotion of employment a general objective for the federal government. Although the Fed did not have a formal employment goal until the Federal Reserve Reform Act of 1977 codified "maximum employment," along with "stable prices," as part of the Fed's so-called dual mandate, earlier legislation nudged the central bank in that direction.[20] For example, legislators described the intent of the Banking Act of 1935 as follows: "To increase the ability of the banking system to promote stability of employment and business, insofar as this is possible within the scope of monetary action and credit administration."[21]

The policy framework to support this new approach reflected the development of macroeconomic theories – including the work of Knut Wicksell, Irving Fisher, Ralph Hawtrey, Dennis Robertson, and John Maynard Keynes – that laid the foundations for understanding how monetary policy could affect real activity and employment and help reduce cyclical fluctuations. At the same time, the Federal Reserve became less focused on its original mandate of preserving financial stability, perhaps in part because it felt superseded by the creation during the 1930s of the Federal Deposit Insurance Corporation and the Securities and Exchange Commission, along with other reforms intended to make the financial system more stable.

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[16] See Meltzer (2003) and Romer and Romer (2013).

[17] See, for example, DeLong (1990).

[18] This language amended section 12A(c) of the Federal Reserve Act.

[19] For example, section 10B enhanced the powers of the Federal Reserve to lend to member banks, and sections 13(3) and 13(13) enabled the Federal Reserve to provide short-term credit to a wide range of potential borrowers in specific circumstances.

[20] More precisely, the three statutory objectives for monetary policy set forth in the Federal Reserve Reform Act of 1977 are maximum employment, stable prices, and moderate long-term interest rates. The dual mandate refers to the first two goals, and the long-term interest rate goal is viewed as likely to emerge from the macroeconomic environment associated with achievement of the employment and price stability goals (Mishkin, 2007). Thus, the interest rate goal of the Federal Reserve Reform Act can be regarded as subsumed within the dual mandate.

[21] See U.S. Congress (1935).

In the area of governance and accountability to the public, policymakers also recognized the need for reforms to improve the Federal Reserve's structure and decisionmaking. The Banking Act of 1935 simultaneously bolstered the legal independence of the Federal Reserve and provided for stronger central control by the Federal Reserve Board. In particular, the act created the modern configuration of the Federal Open Market Committee (FOMC), giving the Board the majority of votes on the Committee, while removing the Secretary of the Treasury and the Comptroller of the Currency from the Board. In practice, however, the Treasury continued to have considerable sway over monetary policy after 1933, with one economic historian describing the Fed as "in the back seat."[22] During World War II, the Federal Reserve used its tools to support the war financing efforts. However, even after the war, Federal Reserve policy remained subject to considerable Treasury influence. It was not until the 1951 Accord with the Treasury that the Federal Reserve began to recover genuine independence in setting monetary policy.

## The Great Inflation and Disinflation

Once the Federal Reserve regained its policy independence, its goals centered on the price stability and employment objectives laid out in the Employment Act of 1946. In the early postwar decades, the Fed used open market operations and the discount rate to influence short-term market interest rates, and the federal funds rate gradually emerged as the preferred operating target. Low and stable inflation was achieved for most of the 1950s and the early 1960s. However, beginning in the mid-1960s, inflation began a long climb upward, partly because policymakers proved to be too optimistic about the economy's ability to sustain rapid growth without inflation.[23]

Two mechanisms might have mitigated the damage from that mistaken optimism. First, a stronger policy response to inflation – more like that observed in the 1950s – certainly would have helped.[24] Second, Fed policymakers could have reacted to continued high readings on inflation by adopting a more realistic assessment of the economy's productive potential.[25] Instead, policymakers chose to emphasize so-called cost-push and structural factors as sources of inflation and saw wage- and price-setting as having become insensitive to economic slack.[26] This perspective, which contrasted sharply with Milton Friedman's famous dictum that "inflation is always and everywhere a monetary phenomenon," led to Fed support for measures such as wage and price controls rather than monetary solutions to address inflation.[27] A further obstacle was the view among many economists that the gains from low inflation did not justify the costs of achieving it.[28]

The consequence of the monetary framework of the 1970s was two bouts of double-digit inflation. Moreover, by the end of the decade, lack of commitment to controlling inflation had clearly resulted in inflation expectations becoming "unanchored," with high estimates of trend inflation embedded in longer-term interest rates.

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22 See Meltzer (2003).

23 See, for example, Orphanides (2003) and Meltzer (2009a).

24 See Romer and Romer (2002b).

25 See Lars Svensson's remarks in Stokey (2002, p. 63).

26 See, for example, Poole (1979), Romer and Romer (2002a, 2013), Bernanke (2004), and Nelson (2005).

27 Estimates of the response of the federal funds rate to inflation for the 1970s generally show only a weak reaction. See Judd and Rudebusch (1998); Taylor (1999a); and Clarida, Galí, and Gertler (2000). For the quotation, see Friedman (1963, p.17).

28 See DeLong (1997) and Taylor (1997) for a discussion of views during the 1970s on the costs of inflation.

As you know, under the leadership of Chairman Paul Volcker, the Federal Reserve in 1979 fundamentally changed its approach to the issue of ensuring price stability. This change involved an important rethinking on the part of policymakers. By the end of the 1970s, Federal Reserve officials increasingly accepted the view that inflation is a monetary phenomenon, at least in the medium and longer term; they became more alert to the risks of excessive optimism about the economy's potential output; and they placed renewed emphasis on the distinction between real – that is, inflation-adjusted – and nominal interest rates.[29] The change in policy framework was initially tied to a change in operating procedures that put greater focus on growth in bank reserves, but the critical change – the willingness to respond more vigorously to inflation – endured even after the Federal Reserve resumed its traditional use of the federal funds rate as the policy instrument.[30] The new regime also reflected an improved understanding of the importance of providing a firm anchor, secured by the credibility of the central bank, for the private sector's inflation expectations.[31] Finally, it entailed a changed view about the dual mandate, in which policymakers regarded achievement of price stability as helping to provide the conditions necessary for sustained maximum employment.[32]

### The Great Moderation

Volcker's successful battle against inflation set the stage for the so-called Great Moderation of 1984 to 2007, during which the Fed enjoyed considerable success in achieving both objectives of its dual mandate. Financial stability remained a goal, of course. The Federal Reserve monitored threats to financial stability and responded when the financial system was upset by events such as the 1987 stock market crash and the terrorist attacks of 2001. More routinely, it shared supervisory duties with other banking agencies. Nevertheless, for the most part, financial stability did not figure prominently in monetary policy discussions during these years. In retrospect, it is clear that macroeconomists – both inside and outside central banks – relied too heavily during that period on variants of the so-called Modigliani-Miller theorem, an implication of which is that the details of the structure of the financial system can be ignored when analyzing the behavior of the broader economy.

An important development of the Great Moderation was the increasing emphasis that central banks around the world put on communication and transparency, as economists and policymakers reached consensus on the value of communication in attaining monetary policy objectives.[33] Federal Reserve officials, like those at other central banks, had traditionally been highly guarded in their public pronouncements. They believed, for example, that the ability to take markets by surprise was important for influencing financial conditions.[34] Thus, although Fed policymakers of the 1980s and early 1990s had become somewhat more explicit about policy objectives and strategy, the same degree of transparency was not

[29] For discussion of these points, see Meltzer (2009b).

[30] See, for example, Axilrod (1982).

[31] Central banks' emphasis on expectations management partly reflected lessons from the rational expectations literature of the 1970s. Monetary policy implications of the rational expectations literature were further clarified by later research. For example, Sargent (1982) brought out dramatically the dependence of inflation expectations on the monetary policy regime in his study of major disinflations, while rational expectations models were extended to include sticky prices (Fischer, 1977; Taylor, 1980; Rotemberg, 1982; Calvo, 1983) and interest rate rules (Sargent and Wallace, 1975; McCallum, 1981; Taylor, 1993, 1999b; Woodford, 2003).

[32] See Lindsey, Orphanides, and Rasche (2005).

[33] See Woodford (2005). Many of these principles were codified in the emerging doctrine of inflation targeting, the practice of which was greatly advanced by central banks in other countries. One of the most notable examples is New Zealand's introduction of inflation targeting in 1990.

[34] See, for example, Goodfriend (1986) and Cukierman and Meltzer (1986).

forthcoming on monetary policy decisions and operations.[35] The release of a postmeeting statement by the FOMC, a practice that began in 1994, was, therefore, an important watershed. Over time, the statement was expanded to include more detailed information about the reason for the policy decision and an indication of the balance of risks.[36]

In addition to improving the effectiveness of monetary policy, these developments in communications also enhanced the public accountability of the Federal Reserve. Accountability is, of course, essential for policy independence in a democracy. During this period, economists found considerable evidence that central banks that are afforded policy independence in the pursuit of their mandated objectives deliver better economic outcomes.[37]

One cannot look back at the Great Moderation today without asking whether the sustained economic stability of the period somehow promoted the excessive risk-taking that followed. The idea that this long period of calm lulled investors, financial firms, and financial regulators into paying insufficient attention to building risks must have some truth in it. I don't think we should conclude, though, that we therefore should not strive to achieve economic stability. Rather, the right conclusion is that, even in (or perhaps, especially in) stable and prosperous times, monetary policymakers and financial regulators should regard safeguarding financial stability to be of equal importance as – indeed, a necessary prerequisite for – maintaining macroeconomic stability.

Macroeconomists and historians will continue to debate the sources of the remarkable economic performance during the Great Moderation.[38] My own view is that the improvements in the monetary policy framework and in monetary policy communication, including, of course, the better management of inflation and the anchoring of inflation expectations, were important reasons for that strong performance. However, we have learned in recent years that while well-managed monetary policy may be necessary for economic stability, it is not sufficient.

## The financial crisis, the Great Recession, and today

It has been about six years since the first signs of the financial crisis appeared in the United States, and we are still working to achieve a full recovery from its effects. What lessons should we take for the future from this experience, particularly in the context of a century of Federal Reserve history?

The financial crisis and the ensuing Great Recession reminded us of a lesson that we learned both in the 19th century and during the Depression but had forgotten to some extent, which is that severe financial instability can do grave damage to the broader economy. The implication is that a central bank must take into account risks to financial stability if it is to help achieve good macroeconomic performance. Today, the Federal Reserve sees its responsibilities for the maintenance of financial stability as coequal with its responsibilities for the management of monetary policy, and we have made substantial institutional changes in recognition of this change in goals. In a sense, we have come full circle, back to the original goal of the Federal Reserve of preventing financial panics.[39]

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[35] See Orphanides (2006) for a discussion of the Federal Reserve's move during the 1980s and 1990s to increased clarity about policy objectives.

[36] See Lindsey (2003).

[37] See Alesina and Summers (1993) and Debelle and Fischer (1994).

[38] For a sampling of the debate, see Stock and Watson (2003); Ahmed, Levin, and Wilson (2004); Dynan, Elmendorf, and Sichel (2006); and Davis and Kahn (2008).

[39] See Bernanke (2011).

How should a central bank enhance financial stability? One means is by assuming the lender-of-last-resort function that Bagehot understood and described 140 years ago, under which the central bank uses its power to provide liquidity to ease market conditions during periods of panic or incipient panic. The Fed's many liquidity programs played a central role in containing the crisis of 2008 to 2009. However, putting out the fire is not enough; it is also important to foster a financial system that is sufficiently resilient to withstand large financial shocks. Toward that end, the Federal Reserve, together with other regulatory agencies and the Financial Stability Oversight Council, is actively engaged in monitoring financial developments and working to strengthen financial institutions and markets. The reliance on stronger regulation is informed by the success of New Deal regulatory reforms, but current reform efforts go even further by working to identify and defuse risks not only to individual firms but to the financial system as a whole, an approach known as macroprudential regulation.

Financial stability is also linked to monetary policy, though these links are not yet fully understood. Here the Fed's evolving strategy is to make monitoring, supervision, and regulation the first line of defense against systemic risks; to the extent that risks remain, however, the FOMC strives to incorporate these risks in the cost-benefit analysis applied to all monetary policy actions.[40]

What about the monetary policy framework? In general, the Federal Reserve's policy framework inherits many of the elements put in place during the Great Moderation. These features include the emphasis on preserving the Fed's inflation credibility, which is critical for anchoring inflation expectations, and a balanced approach in pursuing both parts of the Fed's dual mandate in the medium term. We have also continued to increase the transparency of monetary policy. For example, the Committee's communications framework now includes a statement of its longer-run goals and monetary policy strategy.[41] In that statement, the Committee indicated that it judged that inflation at a rate of 2 percent (as measured by the annual change in the price index for personal consumption expenditures) is most consistent over the longer run with the FOMC's dual mandate. FOMC participants also regularly provide estimates of the longer-run normal rate of unemployment; those estimates currently have a central tendency of 5.2 to 6.0 percent. By helping to anchor longer-term expectations, this transparency gives the Federal Reserve greater flexibility to respond to short-run developments. This framework, which combines short-run policy flexibility with the discipline provided by the announced targets, has been described as constrained discretion.[42] Other communication innovations include early publication of the minutes of FOMC meetings and quarterly postmeeting press conferences by the Chairman.

The framework for implementing monetary policy has evolved further in recent years, reflecting both advances in economic thinking and a changing policy environment. Notably, following the ideas of Lars Svensson and others, the FOMC has moved toward a framework that ties policy settings more directly to the economic outlook, a so-called forecast-based approach.[43] In particular, the FOMC has released more detailed statements following its meetings that have related the outlook for policy to prospective economic developments and has introduced regular summaries of the individual economic projections of FOMC participants (including for the target federal funds rate). The provision of additional

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40 See Bernanke (2002).

41 The statement can be found at www.federalreserve.gov/newsevents/press/monetary/20120125c.htm.

42 See Bernanke and Mishkin (1997).

43 In a forecast-based approach, monetary policymakers inform the public of their medium-term targets- – say, a specific value for the inflation rate – and attempt to vary the instruments of policy as needed to meet that target over time. In contrast, an instrument-based approach involves providing the public information about how the monetary policy committee plans to vary its policy instrument – typically, a short-term interest rate, like the federal funds rate – in response to economic conditions. See Svensson (2003).

information about policy plans has helped Fed policymakers deal with the constraint posed by the effective lower bound on short-term interest rates; in particular, by offering guidance about how policy will respond to economic developments, the Committee has been able to increase policy accommodation, even when the short-term interest rate is near zero and cannot be meaningfully reduced further.[44] The Committee has also sought to influence interest rates further out on the yield curve, notably through its securities purchases. Other central banks in advanced economies, also confronted with the effective lower bound on short-term interest rates, have taken similar measures.

In short, the recent crisis has underscored the need both to strengthen our monetary policy and financial stability frameworks and to better integrate the two. We have made progress on both counts, but more needs to be done. In particular, the complementarities among regulatory and supervisory policies (including macroprudential policy), lender-of-last-resort policy, and standard monetary policy are increasingly evident. Both research and experience are needed to help the Fed and other central banks develop comprehensive frameworks that incorporate all of these elements. The broader conclusion is what might be described as the overriding lesson of the Federal Reserve's history: that central banking doctrine and practice are never static. We and other central banks around the world will have to continue to work hard to adapt to events, new ideas, and changes in the economic and financial environment.

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[44] See Yellen (2012) for an elaboration of this point.

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