
A Century of US Central Banking: Goals, Frameworks, Accountability

Author(s): Ben S. Bernanke

Source: *The Journal of Economic Perspectives*, Fall 2013, Vol. 27, No. 4 (Fall 2013), pp. 3-16

Published by: American Economic Association

Stable URL: <https://www.jstor.org/stable/23560019>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



is collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Economic Perspectives*

JSTOR

A Century of US Central Banking: Goals, Frameworks, Accountability

Ben S. Bernanke

Several key episodes in the 100-year history of the Federal Reserve 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. Here, I’ll use this sequence of “Great” episodes to 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.

The Great Experiment

The original goal of the Great Experiment that was the founding of the Fed was the preservation of financial stability. In the words of one of the authors of the Federal Reserve Act, Robert Latham Owen (1919, p. 24), the Federal Reserve was

■ *Ben S. Bernanke is Chairman of the Board of Governors of the Federal Reserve System, Washington, DC.*

<http://dx.doi.org/10.1257/jep.27.4.3>

doi=10.1257/jep.27.4.3

established to “provide a means by which periodic panics which shake the American Republic and do it enormous injury shall be stopped.”¹

At the time, the standard view of financial 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 (Warburg 1914). 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 famously recommended by the British economist and writer Walter Bagehot (1873 [1897]), the source of the classic dictum that central banks should address panics by lending freely at a penalty rate (see also Willis 1923, p. 1407; Carlson and Wheelock 2012; Bordo and Wheelock 2013). Instead, 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.²

Soon after the Federal Reserve was founded in 1913, 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 in the *Tenth Annual Report of the Federal Reserve Board* (Board of Governors 1924).

The framework that the Federal Reserve employed in these early years to promote financial stability reflected in large measure the fact that the United States was on the gold standard as well as the influence of the so-called “real bills” doctrine.³

¹ A 1929 book review by the financial editor of the *New York Times*, making reference both to the idea of a “great experiment” and to the broad responsibilities for financial stability of the new central bank, observed: “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). To be sure, the US Treasury carried out some central banking functions before the creation of the Federal Reserve, and the First and Second Banks of the United States represented early attempts to establish a central bank. 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, as well as from existing central banks abroad, and thus its creation amounted to an experiment.

² 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. The Monetary Control Act of 1980 gave all depository institutions access to the discount window.

³ Humphrey (1982) discusses the historical evolution of the real bills doctrine. He notes that, in its simplest form, the doctrine contends that banks should lend against short-term commercial paper

In 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. When business activity was increasing, the Federal Reserve would seek to accommodate the need for credit by supplying liquidity to banks; when business was contracting and less credit was needed, the Fed would then reduce the liquidity in the system. The policy framework of the Fed’s early years has been much criticized in retrospect. 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 (Friedman and Schwartz 1963; Humphrey 1982; Meltzer 2003).

As noted, the Federal Reserve pursued its real bills approach in the context of the gold standard. In the 1920s, 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. In principle, the gold standard should limit discretion by monetary policymakers, but in practice US monetary policy did not appear to be greatly constrained in the years after the Fed’s founding. Indeed, the large size of the US economy, together with the use of market interventions that prevented inflows and outflows of gold from being fully translated into changes in the domestic money supply, gave the Federal Reserve considerable scope during the 1920s to conduct monetary policy according to the real bills doctrine without much hindrance from the gold standard.⁴

I’ve discussed the original mandate and early policy framework of the Federal Reserve. What about its accountability to the public? 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 federally appointed Board of Governors, which initially included the Secretary of the Treasury and the Comptroller of the Currency. However, 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

associated with real business transactions (as opposed to other activities such as speculative investment). According to this doctrine, central banks should expand the money supply to facilitate this type of bank lending, by buying commercial paper from banks or accepting as collateral banks’ holdings of such paper. Thus, the doctrine implies that the money supply should expand and contract along with business activity.

⁴Specifically, the Fed was able to sterilize the effects of gold flows on the domestic money supply through open market operations—the purchase and sale of government securities in the open market. Initially, the Fed’s main tools were the quantity of its lending through the discount window and the interest rate at which it lent—the discount rate. Open market operations were “discovered” when, to generate earnings to finance its operations, the Federal Reserve began in the 1920s to purchase government securities. Fed officials soon found 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 (Strong 1926).

were given considerable scope to make policy decisions that applied to their own districts. For example, Reserve Banks were permitted during this time to set their own discount rates, subject to a minimum set by the Board of Governors.

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 of the 1930s was limited at best; the widespread bank failures and the collapse in money and credit that ensued were major sources of the economic downturn. 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 (Friedman and Schwartz 1963).

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 in 1928 of Benjamin Strong, Governor of the Federal Reserve Bank of New York, which left the decentralized system without an effective leader (for example, Friedman and Schwartz 1963, chapter 7). This hypothesis, whether valid or not, 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 US monetary policy during the early 1930s is debated; but, in any case, the gold standard philosophy clearly did not encourage the sort of highly expansionary policies that were needed.⁵ The same can 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 (Meltzer 2003; Romer and Romer 2013). 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 (as discussed, for

⁵ The US commitment to the gold standard might have constrained policy if looser monetary conditions, by encouraging capital outflows and a higher demand for imports, induced sufficient gold outflows to threaten the gold backing of the dollar (Eichengreen 1992). Wicker (1965) and Temin (1989) suggest that US policymakers in the early 1930s indeed 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 idea that the gold standard imposed important constraints on the Federal Reserve.

example, in DeLong 1990). 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 framework 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 lost prestige after the disaster of the 1930s; for example, the Banking Act of 1935 amended section 12A(c) of the Federal Reserve Act so as to instruct 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. 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.⁶

The experience of the Great Depression had major ramifications for all three aspects of the Federal Reserve I am discussing: 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.⁷ 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" (US Congress 1935). 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.

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 decision-making. 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

⁶ 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.

⁷ 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.

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 US Treasury continued to have considerable sway over monetary policy after 1933, with Meltzer (2003) describing the Fed as “in the back seat.” During World War II, the Federal Reserve used its tools to support the war financing efforts by holding interest rates and government borrowing costs low. 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 post–World War II decades, the Fed used open market operations and the discount rate to influence short-term market interest rates; the federal funds interest rate (that is, the interest rate that depository institutions pay each other for loans, usually overnight, to make sure that they hold sufficient reserves at the Fed) gradually emerged as the preferred target for conducting monetary policy. 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 (for discussion, see Orphanides 2003; Meltzer 2009a).

Two mechanisms might have mitigated the damage from that mistaken optimism. First, a stronger policy response to rising inflation—more like that observed in the 1950s—certainly would have helped (Romer and Romer 2002b). Indeed, empirical estimates of the response of the federal funds rate to inflation for the 1970s generally show only a weak reaction (Judd and Rudebusch 1998; Taylor 1999a; Clarida, Galí, and Gertler 2000). Second, Fed policymakers could have reacted to continued high readings on inflation by adopting a more realistic and less optimistic assessment of the economy’s productive potential (Lars Svensson in the discussion following Stokey 2003, p. 63). 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 (for example, Poole 1979; Romer and Romer 2002a, 2013; Bernanke 2004; Nelson 2005). This perspective, which contrasted sharply with Milton Friedman’s (1963, p. 17) 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. A further obstacle was the view among many economists during the 1970s, as discussed in DeLong (1997) and Taylor (1997), that the gains from low inflation did not justify the costs of achieving it.

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

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 (for discussion, see Meltzer 2009b). 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 (Axilrod 1982). The new regime also reflected an improved understanding of the importance of providing a firm anchor for the inflation expectations of the private sector, secured by the credibility of the central bank.⁸ 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 (Lindsey, Orphanides, and Rasche 2005).

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, the Fed 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, during that period, macroeconomists—both inside and outside central banks—relied too heavily in their modeling and

⁸ The emphasis of central banks on management of inflation expectations 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).

analysis on variants of the so-called Modigliani and Miller (1958) theorem, which shows that—under a number of restrictive assumptions—the value of a firm is not related to how that firm is financed.⁹ Influenced by the logic of Modigliani–Miller, many monetary economists and central bankers concluded that the details of the structure of the financial system could be largely 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 (Woodford 2005). 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 (for example, Goodfriend 1986; Cukierman and Meltzer 1986). Although Fed policymakers of the 1980s and early 1990s had become somewhat more explicit about policy objectives and strategy (Orphanides 2006), the same degree of transparency was not forthcoming on monetary policy decisions and operations. The release of a post-meeting statement by the Federal Open Market Committee, a practice that began in 1994, was therefore an important watershed. Over time, these statements were expanded to include more detailed information about the reason for the policy decision and an indication of the balance of risks (Lindsey 2003).

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 continued policy independence in a democracy. Moreover, central banks that are afforded policy independence in the pursuit of their mandated objectives tend to deliver better economic outcomes (Alesina and Summers 1993; Debelle and Fischer 1994).

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 relative calm lulled investors, financial firms, and financial regulators into paying insufficient attention to risks that were accumulating 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.

⁹ Specifically, Modigliani and Miller (1958) argue that, under certain conditions, firms will be indifferent between obtaining funds via equity finance and obtaining funds via debt issue. As noted in the text, some researchers have taken their result as implying that detailed modeling of the financial sector may not be central for understanding private sector decisions or the effects of monetary policy. However, as also noted in the text, Modigliani's and Miller's result depends on restrictive assumptions, including no effects of taxes on financing choices, no bankruptcy costs, no agency problems, and no asymmetric information.

Macroeconomists and historians will continue to debate the sources of the remarkable economic performance during the Great Moderation: for a sampling of the debate, one might start with Stock and Watson (2003); Ahmed, Levin, and Wilson (2004); Dynan, Elmendorf, and Sichel (2006); and Davis and Kahn (2008). 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 now been about six years since the first signs of the financial crisis appeared in the United States in 2007, and the economy still has not fully recovered 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 nineteenth 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 (Bernanke 2011).

How should a central bank seek to enhance financial stability? One means is by assuming the lender-of-last-resort function that Bagehot (1873 [1897]) 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 Federal Open Market Committee strives to incorporate these risks in the cost–benefit analysis applied to all monetary policy actions (Bernanke 2002).

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 Federal Open Market Committee’s communications framework now includes a statement of its longer-run goals and monetary policy strategy. In the statement issued January 25, 2012, (<http://www.federalreserve.gov/newsevents/press/monetary/20120125c.htm>), 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 (for example, as discussed in Bernanke and Mishkin 1997, in this journal). Other communication innovations include early publication of the minutes of FOMC meetings and quarterly post-meeting 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 Svensson (2003) and others, the Federal Open Market Committee has moved toward a framework that ties policy settings more directly to the economic outlook, a so-called forecast-based approach. 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 interest rate—in response to economic conditions. 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 value of the federal funds interest rate). The provision of additional 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 (as elaborated in Yellen 2012). The Committee has also sought to influence interest rates of securities that mature farther into the future (that is, farther out on the “yield curve”), notably through its securities purchases. Other central banks in advanced economies that also confronted the situation that short-term interest rates had been lowered to their effective lower bound of near-zero percent have taken similar measures.

In short, the recent crisis has underscored the need both to strengthen 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.

■ *This paper is a revised version of remarks presented 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 in Cambridge, Massachusetts, on July 10, 2013. I am indebted to Mark Carlson, Edward Nelson, and Jonathan Rose of the Board’s staff for their substantial contributions to the preparation of this article.*

References

- Ahmed, Shaghil, Andrew Levin, and Beth Anne Wilson.** 2004. “Recent U.S. Macroeconomic Stability: Good Policies, Good Practices, or Good Luck?” *Review of Economics and Statistics* 86(3): 824–32.
- Alesina, Alberto, and Lawrence H. Summers.** 1993. “Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence.” *Journal of Money, Credit and Banking* 25(2): 151–62.
- Axilrod, Stephen H.** 1982. “Monetary Policy, Money Supply, and the Federal Reserve’s Operating Procedures.” In *Central Bank Views on Monetary Targeting*, edited by Paul Meek, 32–41. New York: Federal Reserve Bank of New York.
- Bagehot, Walter.** 1873 [1897]. *Lombard Street: A Description of the Money Market*. New York: Charles Scribner’s Sons.
- Bernanke, Ben S.** 2002. “Asset-Price ‘Bubbles’ and Monetary Policy.” Speech delivered at the New York Chapter of the National Association for Business Economics, New York, NY, October 15. <http://www.federalreserve.gov/boarddocs/speeches/2002/20021015>.

- Bernanke, Ben S.** 2004. "The Great Moderation." Speech delivered at the meetings of the Eastern Economic Association, Washington, DC, February 20. <http://www.federalreserve.gov/boarddocs/speeches/2004/20040220/>.
- Bernanke, Ben S.** 2011. "The Effects of the Great Recession on Central Bank Doctrine and Practice." Speech delivered at the Federal Reserve Bank of Boston 56th Economic Conference, Boston, MA, October 18. <http://www.federalreserve.gov/newsevents/speech/bernanke20111018a.htm>.
- Bernanke, Ben S., and Frederic S. Mishkin.** 1997. "Inflation Targeting: A New Framework for Monetary Policy?" *Journal of Economic Perspectives* 11(2): 97–116.
- Board of Governors of the Federal Reserve System.** 1924. *Tenth Annual Report of the Federal Reserve Board, Covering Operations for the Year 1923*. Washington, DC: Government Printing Office.
- Bordo, Michael D., Ehsan U. Choudhri, and Anna J. Schwartz.** 2002. "Was Expansionary Monetary Policy Feasible during the Great Contraction? An Examination of the Gold Standard Constraint." *Explorations in Economic History* 39(1): 1–28.
- Bordo, Michael D., and David C. Wheelock.** 2013. "The Promise and Performance of the Federal Reserve as Lender of Last Resort 1914–1933." In *The Origins, History, and Future of the Federal Reserve: A Return to Jekyll Island*, edited by Michael D. Bordo and William Roberds, 59–98. New York: Cambridge University Press.
- Calvo, Guillermo A.** 1983. "Staggered Prices in a Utility-Maximizing Framework." *Journal of Monetary Economics* 12(3): 383–98.
- Carlson, Mark A., and David C. Wheelock.** 2012. "The Lender of Last Resort: Lessons from the Fed's First 100 Years." Working Paper 2012-056B, Research Division, Federal Reserve Bank of St. Louis, November. <http://research.stlouisfed.org/wp/more/2012-056>.
- Clarida, Richard, Jordi Galí, and Mark Gertler.** 2000. "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory." *Quarterly Journal of Economics* 115(1): 147–80.
- Cukierman, Alex, and Allan H. Meltzer.** 1986. "A Theory of Ambiguity, Credibility, and Inflation under Discretion and Asymmetric Information." *Econometrica* 54(5): 1099–1128.
- Davis, Steven J., and James A. Kahn.** 2008. "Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels." *Journal of Economic Perspectives* 22(4): 155–80.
- Debelles, Guy, and Stanley Fischer.** 1994. "How Independent Should a Central Bank Be?" In *Goals, Guidelines, and Constraints Facing Monetary Policymakers*, edited by Jeffrey C. Fuhrer, 195–221, proceedings of a conference held in North Falmouth, MA, June. Boston: Federal Reserve Bank of Boston. <http://www.bos.frb.org/economic/conf/conf38/conf38f.pdf>.
- DeLong, J. Bradford.** 1990. "Liquidation Cycles: Old-Fashioned Real Business Cycle Theory and the Great Depression." NBER Working Paper 3546, December.
- DeLong, J. Bradford.** 1997. "America's Peacetime Inflation: The 1970s." In *Reducing Inflation: Motivation and Strategy*, edited by Christina D. Romer and David H. Romer, 247–76. Chicago: University of Chicago Press.
- Dynan, Karen E., Douglas W. Elmendorf, and Daniel E. Sichel.** 2006. "Can Financial Innovation Help to Explain the Reduced Volatility of Economic Activity?" *Journal of Monetary Economics* 53(1): 123–50.
- Eichengreen, Barry.** 1992. *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939*. New York: Oxford University Press.
- Fischer, Stanley.** 1977. "Long-Term Contracts, Rational Expectations, and the Optimal Money Supply Rule." *Journal of Political Economy* 85(1): 191–205.
- Friedman, Milton.** 1963. *Inflation: Causes and Consequences*. New York: Asia Publishing House.
- Friedman, Milton, and Anna Jacobson Schwartz.** 1963. *A Monetary History of the United States, 1867–1960*. Princeton, NJ: Princeton University Press.
- Goodfriend, Marvin.** 1986. "Monetary Mystique: Secrecy and Central Banking." *Journal of Monetary Economics* 17(1): 63–92.
- Hsieh, Chang-Tai, and Christina D. Romer.** 2006. "Was the Federal Reserve Constrained by the Gold Standard during the Great Depression? Evidence from the 1932 Open Market Purchase Program." *Journal of Economic History* 66(1): 140–76.
- Humphrey, Thomas M.** 1982. "The Real Bills Doctrine." Federal Reserve Bank of Richmond *Economic Review* 19 (September–October): 3–13. http://www.richmondfed.org/publications/research/economic_review/1982/pdf/er680501.pdf.
- Judd, John P., and Glenn D. Rudebusch.** 1998. "Taylor's Rule and the Fed: 1970–1997." Federal Reserve Bank of San Francisco *Economic Review*, no. 3, pp. 3–16. <http://www.frbsf.org/economic-research/publications/98-3/3-16.pdf>.
- Lindsey, David E.** 2003. *A Modern History of FOMC Communication: 1975–2002*. Unpublished report, Board of Governors of the Federal Reserve System, Division of Monetary Affairs, June. http://fraser.stlouisfed.org/docs/publications/books/20030624_lindsey_modhistfomc.pdf.
- Lindsey, David E., Athanasios Orphanides, and Robert H. Rasche.** 2005. "The Reform of October

1979: How It Happened and Why." Federal Reserve Bank of St. Louis *Review* 87(2): 187–236, <http://research.stlouisfed.org/publications/speech/05/03/part2/MarchApril2005Part2.pdf>.

McCallum, Bennett T. 1981. "Price Level Determinacy with an Interest Rate Policy Rule and Rational Expectations." *Journal of Monetary Economics* 8(3): 319–29.

Meltzer, Allan H. 2003. *A History of the Federal Reserve*, Vol. 1: 1913–1951. University of Chicago Press.

Meltzer, Allan H. 2009a. *A History of the Federal Reserve*, Vol. 2, Book 1: 1951–1969. University of Chicago Press.

Meltzer, Allan H. 2009b. *A History of the Federal Reserve*, Vol. 2, Book 2: 1970–1986. University of Chicago Press.

Mishkin, Frederic S. 2007. "Monetary Policy and the Dual Mandate." Speech delivered at Bridgewater College, Bridgewater, VA, April 10. <http://www.federalreserve.gov/newsevents/speech/mishkin20070410a.htm>.

Modigliani, Franco, and Merton H. Miller. 1958. "The Cost of Capital, Corporation Finance, and the Theory of Investment." *American Economic Review* 48(3): 261–97.

Nelson, Edward. 2005. "The Great Inflation of the Seventies: What Really Happened?" *Advances in Macroeconomics* 5(1): Article 3.

Noyes, Alexander D. 1929. "Wall Street's Controversy with the Reserve Board: Professor Lawrence Takes the Side of the Stock Market in the Quarrel of the Past Year." A review of *Wall Street and Washington*, by Joseph Stagg Lawrence, in *New York Times*, Book Review, August 25.

Orphanides, Athanasios. 2003. "The Quest for Prosperity without Inflation." *Journal of Monetary Economics* 50(3): 633–63.

Orphanides, Athanasios. 2006. "The Road to Price Stability." *American Economic Review* 96(2): 178–81.

Owen, Robert L. 1919. *The Federal Reserve Act: Its Origin and Principles*. New York: Century Company.

Poole, William. 1979. "Burnsian Monetary Policy: Eight Years of Progress?" *Journal of Finance* 32(2): 473–84.

Romer, Christina D., and David H. Romer. 2002a. "The Evolution of Economic Understanding and Postwar Stabilization Policy." In *Rethinking Stabilization Policy*, proceedings of a symposium sponsored by the Federal Reserve Bank of Kansas City, August 29–31. <http://www.kc.frb.org/publicat/sympos/2002/pdf/S02RomerandRomer.pdf>

Romer, Christina D., and David H. Romer. 2002b. "A Rehabilitation of Monetary Policy in the 1950s." *American Economic Review* 92(2): 121–27.

Romer, Christina D., and David H. Romer.

2013. "The Most Dangerous Idea in Federal Reserve History: Monetary Policy Doesn't Matter." *American Economic Review* 103(3): 55–60.

Rotemberg, Julio J. 1982. "Sticky Prices in the United States." *Journal of Political Economy* 90(6): 1187–1211.

Sargent, Thomas J. 1982. "The Ends of Four Big Inflations." In *Inflation: Causes and Consequences*, edited by Robert E. Hall, 41–97. Chicago: University of Chicago Press.

Sargent, Thomas J., and Neil Wallace. 1975. "'Rational' Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule." *Journal of Political Economy* 83(2): 241–54.

Stock, James H., and Mark W. Watson. 2003. "Has the Business Cycle Changed? Evidence and Explanations." In *Monetary Policy and Uncertainty: Adapting to a Changing Economy*, proceedings of a symposium sponsored by the Federal Reserve Bank of Kansas City, Kansas City, MO, August 28–30, pp. 9–56. <http://www.kc.frb.org/publicat/sympos/2003/pdf/Stockwatson2003.pdf>.

Stokey, Nancy L. 2003. "'Rules vs. Discretion' after Twenty-Five Years." In *NBER Macroeconomics Annual 2002*, vol. 17, edited by Mark Gertler and Kenneth Rogoff, specifically the "Discussion" of the paper on pp. 62–64.

Strong, Benjamin. 1926. "Open Market Operations," in hearing before the US House of Representatives Committee on Banking and Currency, April. Reprinted in *Interpretations of Federal Reserve Policy in the Speeches and Writings of Benjamin Strong* (1930), edited by W. Randolph Burgess. New York: Harper and Brothers.

Svensson, Lars E. O. 2003. "What Is Wrong with Taylor Rules? Using Judgment in Monetary Policy through Targeting Rules." *Journal of Economic Literature* 41(2): 426–77.

Taylor, John B. 1980. "Aggregate Dynamics and Staggered Contracts." *Journal of Political Economy* 88(1): 1–23.

Taylor, John B. 1993. "Discretion versus Policy Rules in Practice." *Carnegie-Rochester Conference Series on Public Policy* 39(1): 195–214.

Taylor, John B. 1997. Comment on "America's Peacetime Inflation: The 1970s," in *Reducing Inflation: Motivation and Strategy*, edited by Christina D. Romer and David H. Romer, 276–80. University of Chicago Press.

Taylor, John B. 1999a. "A Historical Analysis of Monetary Policy Rules." In *Monetary Policy Rules*, edited by John B. Taylor, 319–41. University of Chicago Press.

Taylor, John B., ed. 1999b. *Monetary Policy Rules*. University of Chicago Press.

Temin, Peter. 1989. *Lessons from the Great Depression*. Cambridge, MA: MIT Press.

US Congress, House Committee on Banking and Currency. 1935. "Banking Act of 1935, Report No. 742 to Accompany H.R. 7617." 74th Congress. Washington, DC: Government Printing Office.

Warburg, Paul M. 1914. "A United Reserve Bank of the United States." *Proceedings of the Academy of Political Science in the City of New York*, 4 (July): 75–115.

Wicker, Elmus R. 1965. "Federal Reserve Monetary Policy, 1922–33: A Reinterpretation." *Journal of Political Economy* 73(4): 325–43.

Willis, H. Parker. 1923. *The Federal Reserve System: Legislation, Organization, and Operation*. New York: Ronald Press Company.

Woodford, Michael. 2003. *Interest and Prices:*

Foundations of a Theory of Monetary Policy. Princeton: Princeton University Press.

Woodford, Michael. 2005. "Central Bank Communication and Policy Effectiveness." In *The Greenspan Era: Lessons for the Future*, proceedings of a symposium sponsored by the Federal Reserve Bank of Kansas City, pp. 399–474. Kansas City, MO: Federal Reserve Bank of Kansas City. <http://www.kc.frb.org/publicat/sympos/2005/pdf/Woodford2005.pdf>.

Yellen, Janet. 2012. "Revolution and Evolution in Central Bank Communications." Speech delivered at the Haas School of Business, University of California, Berkeley, CA, November 13. <http://www.federalreserve.gov/newsevents/speech/yellen20121113a.htm>.