CHAPTER 1

Introducing the Book

President Johnson Uttering "Those Marble Tower Boys!"

In December 1965, the US central bank, the Federal Reserve or "Fed," unexpectedly raised the interest rate it charged on loans to banks by a half percentage point. President Lyndon Johnson was not pleased. "Those Marble Tower Boys!" was his derisive comment.[1]

Just who were the Marble Tower Boys that Johnson had in mind? The decision to hike the so-called discount rate had been taken by the Fed's executive body, the Board of Governors of the Federal Reserve System. It's headquartered in Washington, DC, with members nominated by the President and confirmed by the Senate for 14-year terms. Its leader, then William McChesney Martin, occupies a four-year term as chairman. But the Board chairman also presides over the Fed's monetary policymaking body—the Federal Open Market Committee (FOMC). For more than seventy-five years, it has had the responsibility for setting the shortest-maturity interest rate. (During the second half of the Fed's history, the shortest-term rate has been the one on overnight loans between banks of balances on deposit at the Fed, which is called the "federal funds rate." Such interbank lending has prevailed ever since the funds market matured around the time of the incident with President Johnson. Those bank balances are held "in reserve" at the Fed, which accounts for the word "Reserve" in its official name.) Voting members of the FOMC consist of the seven members of the Board of Governors plus five of the presidents of the 12 regional Federal Reserve banks. Four of them serve on a rotating basis, but the president of the Federal Reserve Bank of New York is a permanent member, acting as the Federal Open Market Committee's vice chairman. We'll hear a lot about the FOMC as well as the Board in this book.

Johnson deftly skewered the Board with his spontaneous phrase. It alluded to the imposing structure where the Board is housed and the FOMC meets: the white marble Eccles Building on Constitution Avenue, named for a former chairman, Marriner S. Eccles. By conjuring up "ivory tower," it expressed the President's contempt for what he saw as a bunch of academic types as blissfully unaware of political realities as any committee of professors. Three of them indeed were professional

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economists, appointees of Presidents Kennedy and Johnson. And over Chairman Martin's objections—not because of political naïveté, which was President Johnson's concern, but owing to the lack of a practical mindset—Johnson was to appoint a fourth economist to the Board. Also, to a modern ear, partly because of the building's location in Foggy Bottom, the phrase is reminiscent of the "Soggy Bottom Boys," the disdainful, tongue-in-cheek name of the bluegrass singing group in the movie released in 2000, *O Brother, Where Art Thou?*

Finally, the word "Boys" is nothing if not politically incorrect, suggesting a decided lack of diversity. In fact, many Board members since that time have been blacks and women, starting with the aforementioned economist who was appointed by Present Johnson, Andrew F. Brimmer. Just in the years since 1995, that eminent roster of governors has consisted of Susan M. Phillips, Janet L. Yellen (once governor, then vice chair, and now chair), Alice M. Rivlin, (vice chair), Roger W. Ferguson (vice chairman), Susan S. Bies, Elizabeth A. Duke, Sara B. Raskin, and Lael Brainard. In the three research divisions at the Board, the new hires with a PhD or equivalent for several decades have been split nearly evenly between men and women, who've been directors of several divisions, while the retired Board secretary, Jennifer Johnson, is black.

Still, this is a book about economic history, and it is a cliché among historians that applying contemporary standards to behavior in the past is impermissible. Even so, when the available members of the FOMC assembled in 1993 to testify before the House banking committee, my wife, Son, an ethnic Korean, commented at the time on their picture in the *Washington Post* by remarking, "They look like a bunch of white guys with glasses. Just like you." Even worse in terms of the disparity of their makeup, former Vice Chairman David W. Mullins Jr. noted at the time that "three of the sixteen are named Robert!" But in somewhat longer than a decade the succession of one male chairman after another was destined to terminate.

Rounding Out a Century of Federal Reserve History with a Significant Transition

When Bernanke's second four-year term as chairman expired January 31, 2014, President Obama made history by choosing Janet Yellen as his successor. She took over the helm just three days later. Until then she had served as the Board's vice chair after October 2010, while just before that she had been the president of the San Francisco Fed.

The transition took place only a little more than a month after the Federal Reserve celebrated the centenary of its founding on December 23, 1913, during President Woodrow Wilson's time in office. About one-fourth of this book summarizes the Fed's maturation during its earlier years, while the rest covers monetary policy as well as related developments during Bernanke's eight-year tenure as chairman.

Presenting the Book's Three Main Theses

Walter Bagehot penned in his influential *Lombard Street* in 1873.[2] He recommended that in a bank panic, the central bank should lend freely to solvent institutions at a high rate on the basis of collateral that would be good in normal circumstances.[3] Some 63 years later Vera C. Smith wrote in her impressive 1936 book defending "free banking,"

The Rationale of Central Banking, "A central bank is not a natural product of banking development. It is imposed from outside or comes into being as a result of Government favours."[4] But while central banks may have arrived unnaturally from the outside, their advent nonetheless obeyed the internal logic deciphered by Bagehot that in democracies inevitably has played out over time.

After a half-century delay, in 1985 Charles Goodhart titled the first edition of his insightful book defending central banking *The Evolution of Central Banks: A Natural Development?*[5] But insofar as he was drawing an analogy to the driving principle of biological evolution, his title is a misnomer. The process of biological evolution combines the forces identified by Gregor Mendel and Charles Darwin of random genetic mutations interacting with the winnowing of natural and sexual selection. By contrast, an underlying premise of the present volume is that the history of central banks in general and of the Federal Reserve in particular is distinctly different, because these related histories embody specific "laws of motion," to use Karl Marx's (in his case inaccurate) term. Analogously, in Noam Chomsky's theory of language development, despite superficial differences in specific words arising by chance, a deep grammatical structure always emerges, given the wiring of the human brain.[6] The fundamental direction traced out by the establishment and development of central banks in the chief commercial countries at the time Bagehot wrote, and later in the United States, certainly has not been just a succession of random events.

To be sure, the particulars of policy design, implementation, and communication have continued to adapt as the economic and political environment has altered over historical time, while feedback from Fed decisions to the surrounding environment also has occurred. In this regard, the concluding paragraph from a history of FOMC communication that I left behind for that Committee in June 2003 shortly before I retired may bear repeating:

> The fundamental approach to monetary policy of targeting the federal funds rate seems well ensconced, which would preclude the type of alteration to operating procedures that would give rise to changes in transparency practices. This viewpoint, however, may be too oriented to the present time and circumstances. The history of the Federal Reserve is replete with changes to policy design and operating procedures from one decade to the next. One can envision the Committee moving toward new approaches to its policy, which may well involve revisions to its communication procedures. For example, adopting some variant of an "inflation targeting" regime would surely alter the nature of the FOMC's communication with the public and the Congress. Even a gradual evolution of design and operating procedures could at some point significantly affect the FOMC's transparency practices, although in ways that are now unknowable.[7]

And to be sure as well, the alterations in the environment have been predominantly random, though they have left the impression of paradoxical twists and turns. Although pure chance has played an important role, this book still posits that democracies necessarily have established in actuality—though it may well take an extended amount of time—the basic principles laid out by Bagehot, Smith, and Goodhart.

Bagehot, without using the term "lender of last resort," discussed at length the relevance of the concept. Smith showed how the duties of a central bank arose from its monopoly in note issue. Goodhart asserted that competitive pressures on commercial banks in a milieu of limited information inexorably led to pro-cyclical

fluctuations and bank runs. However, during a financial panic, just at the time when more liquidity was needed, private banks instead withdrew from interbank lending. This inherent problem required the creation of a non-profit-maximizing central bank to serve as a lender-of-last-resort. But the knowledge that the central bank would intervene to forestall bank runs created excessive risk taking, which in turn implied the need for supervision and regulation of private banking activities.[8]

Goodhart further argued that the central bank's monetary responsibilities were grafted onto these prudential duties. Of course, so long as the central bank maintained convertibility of the currency into gold at a fixed price in terms of the domestic unit of account, the operation of the gold standard confined the central bank's activities in all but the short run. But because that standard often imparted more overall restrictiveness than was politically acceptable, by the time Goodhart wrote all nations had adopted full-fledged fiat money, with more complete central-bank discretion over monetary policy.

The historical process of course has moved on in the more than quarter century since Goodhart considered the principles that had been at work.[9] The present study incorporates this later experience and the associated literature to analyze the flowering of central bank independence, accountability, and transparency, which by now have been institutionalized around the world. The first thesis of this book is that a democratic political system ultimately will establish a central bank unfettered by political pressure. It will be able to choose independently instrument settings allowing it to pursue a statutory goal of price stability, and perhaps explicitly low unemployment as well. At that point a transition to transparent communications becomes necessary in order to ensure adequate central-bank accountability. One aspect of the experience of recent decades of the Fed's history represents this thesis being realized in practice.

A democratic political system, while not ideal, still is better than all the alternatives, but having elected representatives design monetary policy is universally viewed as undesirable. Support for replacing central banks with a system of competition among private currency issuers can be found in work of Vera Smith, her mentor F. A. Hayek, and Laurence H. White.[10] Other libertarian opponents of an independent central bank certainly have not advocated leaving monetary decisions to politicians: Ludwig von Mises and Murray Rothbard, as well as their modern-day intellectual descendant, Ron Paul, argued for replacing the Fed with the automatic self-regulating workings of the long-defunct gold standard.[11] Monetarists like Milton Friedman advocated that a non-independent central bank implement a nonresponsive rule with fixed k-percent money growth.[12] Allan Meltzer and Bennett McCallum later proposed a responsive rule for the growth of some monetary measure, but one still engraved in stone.[13] But today most conservative economists have joined liberal economists too numerous to cite who have defended over time the independence of central banks.

One well-known problem with freely elected politicians setting monetary conditions is that their incentives encourage an excessively short timeframe. After all, in the United States elections for the House of Representatives reoccur every second year and for the president every fourth year. By contrast, the full effects of monetary policy actions, especially on inflation, take much longer to occur. To lengthen the time horizons of members of the Board of Governors, the Federal Reserve Act in 1935 established

14-year terms. The discussion surrounding the original passage of the act emphasized the formation of an institution embodying a scientific spirit and independence from political pressure, like the Supreme Court. The role of the private Reserve banks was seen as diluting the political power of the Board in Washington. The natural proclivity of compassionate politicians is to resist fighting inflation on the backs of the unemployed. But this attitude also ended up making politicians overly tolerant of rapidly rising prices. Repeated inflationary disasters in the United States proved necessary to convince finally its political leaders that the electorate actually is none too sanguine about virulent inflation. Politicians themselves decided that monetary policy decisions should be taken out of their own hands once and for all and instead handed over to independent experts.

True, the statutes can reserve the right to establish the long-run objectives for monetary policy—either by granting pride of place to low inflation or, as in the United States, by establishing a "dual mandate" that elevates sustainable employment to an equal station. But allowing a central bank the independent scope to set the instruments of monetary policy according to its best judgment, by protecting it from day-to-day political pressures, turns out to be by far the most efficacious arrangement. A central bank's "instrument independence" actually is essential to producing prosperity, because the prerequisite of price stability can be ensured only by a central bank that is autonomous in this regard. Granting a central bank some freedom of action is an arrangement that will be realized over the long run in the history of a democracy.

During the initial, albeit in the United States prolonged, period before the unenlightened polity has afforded a central bank its full instrument independence, it may be subject to the direct dictates of the Treasury because it is wholly under its thumb. Wartime often induces a state of serfdom, if not outright servitude. Or the central bank may have attained some nominal independence before the political class has really foresworn its inflationary ways. In that case, the initiation of serious anti-inflationary monetary policy can engender so much political opposition that the effort has to be abandoned before it really has begun to bite. Such circumstances force a central bank, especially one determined to fight entrenched inflation, to use obscurity to protect itself against the inflationist tenor of the times. The central bank has to hide just how restrictive it has become in order to keep withering criticism at bay. But over time, politicians learned enough to turn specifically away from a know-nothing opposition to the high interest rates sometimes needed to restrain inflationary pressures; they pivoted as well toward permitting instrument independence. Instead, politicians began an assault on the predictable consequence of their own earlier opposition to controlling inflation: central bank secrecy itself.[14]

A part of the first thesis of this book is that the continuing historical trend toward more central bank transparency in the last couple of decades inevitably followed on the heels of full-fledged instrument independence.[15] Although economic theory provides some justification for transparency, that factor should not be overstated. Still, monetary policy is a little more effective in terms of economic outcomes when market participants are more completely informed. Then they can better comprehend the rationale for monetary-policy actions and better predict the conditional future course of the central bank's policy stance. But the main impetus toward greater Fed openness in the United States surely has been political pressure. "More transparency" has been

a mantra in the US political realm since the cover-up in the Watergate episode in the mid-1970s. And, starting in 1992, Representative Henry B. Gonzalez, chairman of the House Banking Committee, heighted the attack on Fed secrecy.

A justification in political theory for central bank transparency is easy to find. It centers on fostering accountability for an independent central bank. A problem in a democracy is that if unelected central bankers are afforded instrument independence, then how in the world is their power to do mischief as opposed to good to be circumscribed? The answer to this question that has arisen in democratic nations around the world is to have the behavior of central banks subject to continual trial in the court of public opinion. But how can that be accomplished effectively if the central bank keeps its decisions about policy design and implementation hidden from the penetrating gaze of the media, the public, and the politicians? Even if the central bank is dragged kicking and screaming into the glare of the sunlight, society is going to be better off on average if it is open about most matters.

Yet neither mandated nor voluntary transparency should go too far. I personally think, for example, that the integrity of the FOMC's deliberative process requires that TV cameras or radio microphones not be allowed into the board room in real time during FOMC meetings. I'm afraid doing so would just encourage grandstanding rather the open and rational debate essential to sound decisions. As another example, financial markets become unnecessarily but understandably skittish whenever a central bank announces immediately that it is tempted to tighten in the near future depending on the incoming data. So a central bank should not travel too far down this route. Finally, in a bank panic, the central bank obviously shouldn't reveal the identity of individual borrowing institutions, else they would stay away to escape any stigma.

Not that an optimal amount of transparency always will yield infallible decisions. If put on the spot and forced to hazard a crude estimate based on a century of Fed history, I'd guess that the FOMC under the very best of circumstances will mess up a little some 20 percent of the time but screw up royally another 10 percent of the time. Two days after writing this passage, I read a similar assessment made in an interview with Alan Greenspan:

> Asked if he had regrets about any of his old decisions, Mr. Greenspan said that policy makers are lucky if they get it right 80% of the time. "Central bankers don't fret about the ones that came out less well than they would like. They just press forward and do the best they can," he said.[16]

While such a fraction admittedly is not great, like democracy itself, it's still far better than any alternative arrangement that I can imagine. But this undoubted fact does raise an uncomfortable issue having to do with washing one's dirty laundry in public. Fortunately, we live in a political climate where every policy error is pounced upon by merciless critics (like me). Still, I do sometimes wonder whether it really is advisable for a fallible central bank—being all too subject to error but for the social good needing to retain its independence from political pressure—to go all the way to a socially optimal degree of democratic transparency? It's just a thought. I'll leave the question on the table for you, the reader, to answer.

This book's second thesis relates initially to the absence or presence of large-scale asset purchases during the Great Depression, but with a modern application as well.

It places the blame for the start of a business cycle downturn in August 1929, the stock market crash in October, and the early development of the Great Depression itself squarely on the lagged effects of the restrictiveness in monetary policy in 1928 and much of 1929 that the Fed established to resist the stock market boom. Specifically, the near doubling of Treasury bill rates for the two years ending in the summer of 1929 was the beginning of the primary cause of the Great Depression. Of course, the Fed never should have tightened its policy screws so much in the late 1920s. But taking that action as a given, the Fed then was much too halting, simply as a policy judgment, in pushing short-term interest rates to zero by buying securities. This untoward reticence was the case even after the Fed's holdings of "free gold" were depleted after England's departure from the gold standard in September 1931. The Fed should have reacted to weakening money much earlier in the 1930s through large-scale purchases of Treasury securities. This unfortunately hypothetical approach would have reimbursed the private sellers of those securities, thereby injecting liquidity, lowering Treasury bill rates, and bolstering overall spending before the depression got really severe. But the Fed failed before February 1932 to make such purchases of securities in the open market.

It turned out that this book is in very good company. Decades after this argument was independently formulated the following quote from John Maynard Keynes appeared in a speech by then Governor of the Central Bank of Cyprus and Member of the Governing Council of the European Central Bank Athanasios Orphanides:

> "I repeat that the greatest evil of the moment and the greatest danger to economic progress in the near future are to be found in the unwillingness of the Central Banks of the world to allow the market rate of interest to fall fast enough" (Keynes, 1930, p. 207). He expressed concern that the "mentality and ideas" of the policymakers could stand in the way of the necessary policies (Keynes, 1930, p. 384) . . . "The Bank of England and the Federal Reserve Board . . . should pursue bank-rate policy and open market operations . . . [t]hat . . . combine to maintain a very low level of the short-term rate of interest, and buy long-dated securities . . . until the short-term market is saturated" (Keynes, 1930, p. 386).[17]

Thus, Keynes, Friedman and Schwartz, and Meltzer correctly concluded, though through different lines of argument from each other, that the Fed could and should have softened the magnitude of the Great Depression, but it did not do so. To account for the severe weakness in aggregate demand once the Great Depression got going, Keynes emphasized autonomous drops in spending, whereas Friedman and Schwartz pointed to bank panics and the resultant destruction of deposits, while Meltzer identified the Fed's focus on member bank borrowing of funds from the Fed as what forestalled massive purchases of securities.[18] This book disagrees with all three schools of thought. Once the Fed had driven the shortest-term interest rate to zero, the restraining forces already set in motion persisted unimpeded, as large-scale purchases of securities became akin to "pushing on a string," the apt term coined by a congressman in the 1930s. From February to June 1932 the Fed finally instituted "quantitative easing" (QE).[19] This is the modern phrase describing large-scale financial-asset purchases by the central bank. It's derived from the policy adopted by the Bank of Japan early in the last decade. It's used to identify this supplemental monetary policy action, which balloons the central bank's balance sheet and supposedly stimulates the

economy. Yet the large-scale security purchases that boosted bank balances at the Fed proved to have little effectiveness. By the time the Fed had driven short-term interest rates to a de minimis level by mid-1932, further massive central bank purchases of securities in the open market to elevate banks' Fed balances further would have imparted little, if any, stimulus to depressed private spending. That is, once Treasury bill rates hit the zero lower bound, the Fed was correct to assert that monetary policy actions had become impotent.

Modern exponents of such a strategy like Chairman Ben Bernanke and Vice Chair Janet Yellen asserted that this approach is simulative not because the banks' Fed balances become elevated but because according to the "preferred habitat hypothesis" the Fed's bond purchases reduce the stock held by the public and thus lower long-term rates compared with their levels otherwise. But economic research on an obvious analogy has suggested that foreign exchange intervention that alters the outstanding stocks of the public's holdings of different currencies has no permanent impact on exchange rates.[20] (Such intervention is commonly "sterilized" by offsetting any monetary impact through selling other financial assets.) And the evidence from "operation twist" in 1961, as well as from the Bank of Japan's quantitative easing for half a decade after March 2001 as well as more recently, is not encouraging in this respect. Finally, the results of the Fed's recent episodic turns to quantitative easing during and after the financial meltdown, despite some dubious supportive research, arguably bolster this view given the tepid recovery at least through Bernanke's chairmanship.

We should take this last observation to heart. The Fed's quantitative easing has not been as effective a monetary stimulus as Chairman Bernanke initially claimed in his monetary policy testimonies in early March and mid-July 2011 before the Senate and House Banking Committees and at Jackson Hole in August 2012. The simulations of the Board staff's econometric model that Bernanke cited to support a sense of the program's potency had assumed the permanence, other things equal, of initial announcement effects about such techniques in financial markets. But the large backups in bond rates in the months after the formal announcements of the first, second, and third rounds of quantitative easing (QE1, QE2, and QE3), which represent the unwinding of the artificially low long-term interest rates induced by the emotional overreactions of investors on top of the profit-taking of speculators selling securities ultimately to satisfy the Fed's demand, raise questions about that assumption. These experiences demonstrate pretty clearly an automatic reversal in long rates of the original impacts.

This behavior of long rates is only partly a result of initial emotional or speculative over-reactions that can induce a temporary decline in the term premium. As the economic and financial outlook varies over time, the main lasting element behind the behavior of the yield on Treasury bonds relates to the other component capturing the expected path of short rates, which is a "jump variable," to use the jargon of economists. Accordingly, the changing quote as time passes really depends mostly on shifting expectations of the short rate down the road and is little affected by whatever historical values the bond rate had happened to record. In particular, the initial announcement effect of introducing QE doesn't much matter to today's quote, because the long-rate always will come to reflect predominately the varying economic and financial outlook. Thus, the assumption of the Fed (and several other central banks) of a permanent other-things-equal impact of QE is just invalid.

The behavior of another jump variable also is instructive. The stock price surge after the hint of QE2 in August 2010 and then implementation that November partly reflected the Fed's assertions that large-scale security purchases would be effective in lastingly raising inflation expectations and stimulating spending. But despite impressive corporate profits, by the time of the Jackson Hole symposium in late August 2011, all the gains in equity prices after QE2's implementation the previous November had been erased. These declines in stock prices reflected not only weak incoming economic data but also the growing recognition that the Fed had exaggerated the effectiveness of the massive open market purchases.

Even so, despite the increasing skepticism of both fresh research findings and contemporaneous media commentary, the Fed seemingly had become locked in by its numerous earlier supportive statements. So much for pre-commitment in the face of new contradictory information. The FOMC went ahead anyway and adopted QE3 in September 2012. It decided to buy for its portfolio each month $40 billion of mortgage-backed securities. That December it elected to add enough longer-term government securities to bring its total purchases each month to around $85 billion. We'll return in spades to a discussion of the various programs involving quantitative easing in Chapters 7, 8, and 9 that describe and evaluate these Fed policies.

The book's third thesis is that beyond QE3's medium-term ineffectiveness in boosting economic growth, the Fed's large-scale purchases of longer-term government securities also have little justification in postponing the inevitable day on the current fiscal course when new investor fears will cause bond yields adjusted for the market's expected inflation to start to mount. As we soon shall see, this unfortunate conclusion resulted from the welcome plank in the Emergency Economic Stabilization Act of 2008 that included the Troubled Asset Relief Program allowing the Fed to pay interest on bank balances. True, excessive structural federal deficits have meant an ongoing rapid ascent of overall governmental debt, which has been steepened by the further swelling of the deficit owing to the historically meager business-cycle recovery. But as yet the behavior of the national debt per se hasn't affected any economic conditions, including bond rates. The reason is that no one as yet has become very concerned about any risk that oppressive tax hikes or even a government default on its obligations for interest and principal might become necessary. Indeed, investors still consider Treasury securities to be the safest financial asset in the world. But that day will come if recent fiscal trends continue. As Erskine Bowles, co-chair of the National Commission on Fiscal Responsibility and Reform, insightfully quipped, "We're the best looking horse in the glue factory."[21]

The added drawback to quantitative easing has arisen because of the aforementioned October 2008 authorization for the Fed to remunerate reserves. The anticipated higher interest return on the extra Treasury bonds purchased by the Fed effectively would be offset fully by the greater expected interest expense associated with higher payments on banks' added Fed balances. That counterbalancing is because the Fed presumably would keep the interest rate on these balances closely aligned over time with its intended federal funds rate, expectations of which in turn are the dominant influence on the current market bond yield. Thus, in terms of a present discounted value, the expectations of the overall future amount of Fed remittances to the Treasury essentially would be unaffected by any form of quantitative easing.

To date, none of that has mattered much for economic conditions because the bond vigilantes have remained quiescent. But the open-ended large-scale Fed purchases of government debt that was a component of QE3 after late 2012 did not postpone the eventual start of a debt-related crisis by even one day. And after that day of reckoning does arrive, the Fed's future decisions of whether to enlarge, retain, cease, or unwind its policy of quantitative easing won't matter either, despite some temporary impact on long rates. The reason is that at that point the relevant measure of net government debt "in the hands of the public" will have come to include not only the holdings by the true public but also those of the Fed. And at that point nothing the Fed can do regarding its quantitative easing would affect that crucial measure of net debt. The ill-fated advent of upward pressure on long-term interest rates would continue unabated even in the face of the Fed's augmentation of sizable purchases of Treasury securities.

Describing the Historical Context for Founding the Federal Reserve System

Why was the United States the only major commercial country after 1875 without a central bank? And at the other end of the pre-Federal Reserve historical process, why in 1913 did the country's leaders finally think it necessary to establish a central bank to manage its money? The answer to the first question is that the people distrusted political and financial power concentrated in Washington, DC, and New York City. But money posed one of the central problems of the nation's founding to which the Constitution tried to provide an answer. Its authors clearly assumed the operation of a metallic standard. The Constitution gave the Congress the right to coin money and to regulate its value only in the sense of specifying the weight of gold or silver making up the dollar unit of account. Whether the Founding Fathers would have sanctioned the federal government issuing paper currency and managing its supply is doubtful in light of the hyper-inflationary experience with the revolutionary "Continental."

In various forms, money remained a major political and economic issue throughout the late eighteenth, nineteenth, and early twentieth centuries. That epoch included the First and Second Banks of the United States, chartered from 1791 to 1811 and 1816 to 1836, respectively, the experiment with "free banking" from 1837 to 1862, the suspension of gold convertibility and creation of Greenbacks in 1862, the Greenback-induced inflation during the Civil War, the National Banking Acts of 1863, 1864, and 1865, the Silver era from 1878 to 1893, the resumption of convertibility under the gold standard in 1879, populist discontent over deflation in the closing decades of the nineteenth century, William Jennings Bryan's support for Free Silver in his first campaign for the presidency in 1896, the era of National Banks from 1863 to 1913 with worsening panics, ending in the Panic of 1907, and the perceived need for an "elastic" currency to meet varying seasonal needs.

The first quasi-central bank in the colonies was the Bank of North America, chartered in late 1781. It handled the fiscal affairs of the nascent government of the Confederation and issued currency. Subsequently, acceding to a proposal by Alexander Hamilton, the new Congress passed legislation signed by President Washington establishing the First Bank of the United States in 1791, with a 20-year charter.[22] The new bank carried out some functions of a central bank, serving as the fiscal agent

for the federal government and issuing paper money backed by gold reserves. It also was a private commercial bank, accepting deposits and granting loans. Through those activities, together with its decisions about whether or not to redeem the notes of state banks for specie, it could affect monetary and credit terms and conditions in the country. Because those actions generated controversy, a proposal to renew its charter failed by one vote in both chambers of the Congress. Its doors were locked for good in 1811.

After the War of 1812, the federal government's finances were in a shambles, including a substantial war debt, which provided the Congress with an incentive to create the Second Bank of the United States. President Madison reluctantly signed the bank law in 1816, also with a 20-year charter.[23] Its operations resembled those of its predecessor, including acting as the government's fiscal agent and issuing banknotes. In contrast to the notes issued by state-chartered banks, which the Second Bank policed, only its notes were acceptable in payment of federal taxes. The Bank ended up with 25 branches, compared with the eight branches of the First Bank. Thus, its commercial and fiscal activities even more effectively influenced credit conditions in the economy. Unfortunately, these activities of the Second Bank, like those of its predecessor, too often caused severe economic hardship, helping to form an unfavorable public opinion.

The Bank's monetary policy performance improved for a time after Nickolas Biddle became its head in 1823. However, in 1828 the electorate chose an implacable enemy of the Second Bank as US president—Andrew Jackson. He considered only gold and silver coins to be acceptable as a medium of exchange. Shortly after his reelection in 1932, Jackson decreed that federal deposits be transferred from the Second Bank to the state banks. The loss of Treasury deposits reduced the scope for the Second Bank to influence credit conditions around the country. In 1834, the House of Representatives allowed these deposits to stay in the state banks and refused to recharter the Second Bank. It ceased operations in 1836.

The demise of the Second Bank meant the heyday of state-chartered banks, but their behavior wasn't always responsible. They immediately went on sprees of lending and associated note-issuing, backed by specie or state-government securities, which induced accelerating prices. In response, as one of his last acts in office, President Jackson promulgated the Specie Circular in 1836, to be implemented by incoming President van Buren. It required gold or silver coins in payment for public lands. The bursting of the real estate bubble caused the panic of 1837, which was succeeded by a five-year depression. Another panic occurred 20 years later. The Free Banking Era, during which critics applied the moniker "wildcat banks" to the risky state institutions, lasted until 1863.

In that year and the next two President Lincoln signed three National Bank acts. The prohibitive tax on the notes issued by state banks ended their circulation, thereby creating a uniform national currency. Also, the acts allowed the federal government to grant charters for national banks. Unlike the case in Canada and most of Europe, but like northern state banks, national banks had to be unit banks without branches. The banks were supervised by a new agency, the Comptroller of the Currency. Both types of banks expanded over the next 70 years.

In terms of economic performance, inflation emerged as a serious problem in the Civil War, when the government financed its activities by issuing Greenbacks. In response, the polity resolved to return to convertibility under the gold standard. The

unnecessary step of restoring pre-war parity, though, required a major deflation in prices. Nevertheless, despite the implied economic misery, the objective was attained in 1879. Maintaining the gold standard engendered a continued deflation, which took place during a secular boom in production. Still, farmers became disenchanted with the decline in relative as well as absolute agricultural prices, which spurred the Free Silver movement.

The Bland-Allison Act, passed in 1878, required the Treasury to buy a minimum amount of silver each year to be coined into standard silver dollars. The Treasury Note Act of 1890, or the Sherman Silver Purchase Act, was the greatest accomplishment of the silver movement, which culminated in the campaign of Democrat William Jennings Bryan in 1896. But by then the Congress already had repealed the silver purchase clause, ending in 1893 federal assistance to silver production. The falling general price level had stimulated gold exploration both domestically and internationally, and world gold production nearly doubled between 1893 and 1897.[24] The associated upturn in prices ended the political ferment over silver. Yet concerns remained under the gold standard, though not about price stability over very long intervals considering this automatic mechanism inversely relating prices to gold production. Instead, justifiable worries persisted about medium-term variability of overall prices as well as output.

Financial instability persisted in the National Banking era, which saw major banking panics in 1873, 1893, and 1907, and incipient panics in 1884 and 1890, when only sufficient issuance by the New York Clearing House of certificates—script used to clear checks at that institution—forestalled major panics. The bank panics "were accompanied by money market stringency, a stock market collapse, loan and deposit contractions, runs on banks, bank failures, the issue of Clearing House certificates, and in the case of the three major banking panics the partial suspension of cash payment."[25]

The recurrent liquidity crises and banking panics showcased the need for banking reform. After the intense Panic of 1907, the Congress passed the Aldrich-Vreeland Act of 1908, which authorized the emergency issuance of currency. It also created the National Monetary Commission, chaired by Senator Nelson Aldrich (Republican, Rhode Island), to study the needed financial reforms and make recommendations. The commission's massive reports in 1910 and 1911 identified two main financial flaws: the banking system was prone to panics and the currency was not responsive to periodic variations in demand. Heightened seasonal pressures, especially at year-end and in the autumn harvesting season, had imparted stringency to the money market, elevating borrowing rates.[26] This phenomenon regularly had added to the risk of bank failure. The associated more voluminous transactions had raised the demand for currency, which was issued only by national banks. But the requirement that the currency be backed only by Treasury securities constrained its supply.[27] The Commission furthermore pointed out inadequate bank supervision and inefficient check collection.

The final report of the National Monetary Commission, the so-called Aldrich Plan, addressed all of these problems. Released in early 1912, it incorporated the results of secret discussions on Jekyll Island off Georgia in November 1910 as well as a European tour in 1908. It called for a National Reserve Association, with a central body and 15 branches, but under bankers' control. The bankers' bank would

rediscount bank loans—acquire the paper created by the loans at a discount from their face value—and issue currency more responsive to business conditions. William Howard Taft's platform in the 1912 campaign reflected Aldrich's proposals.

Populists, already worried about the "money trust" of New York bankers, derided the prospect of stronger banker control of the nation's finances. Woodrow Wilson and the progressive Democratic Party assumed the mantle of governmental oversight of central banking. In the elections of 1912 that party added control of the Senate to a previous majority in the House as well as winning the White House. With that outcome, no monetary reform proposed by the Republican Party had any hope of becoming law. Newly elected President Wilson worked with the new chairmen of the House and Senate banking committees, Congressman Carter Glass (Democrat, Virginia) and Senator Robert Owen Jr. (Democrat, Oklahoma). They crafted compromise legislation based on federal control of central banking through an independent regulatory body. But commercial bankers would have authority over regional Reserve banks. President Woodrow Wilson signed the Federal Reserve Act on December 23, 1913.

Previewing What's to Come

After this introduction, chapters 2, 3, and 4 in Part I take a bird's eye view of the century after the founding of the Fed.[28] They highlight the sometimes surprising and ironic linkages that related economic conditions, economic ideologies, and stabilization policies during that whole time. Chapter 2 first takes up the episode of World War I and the sharp recession that ended in 1921. Afterward the Fed experienced its "high tide" for most of the rest of the decade but then unfortunately helped induce the Great Depression. That tragic episode shaped the theory and practice of stabilization policies, which affected economic activity and price pressures.

Chapter 3 relates how legislation crafted by recently appointed Board Chairman Marriner S. Eccles founded the modern Federal Open Market Committee in August 1935. But in practice the Treasury retained significant control over monetary policy through the years of World War II, when the Fed dutifully pegged interest rates. That subservience ultimately was unwound after the Fed and the Treasury had a meeting of the minds in an accord reached in March 1951 that emancipated the central bank. The main negotiator for the Treasury was William McChesney Martin, who a month later was ensconced in the chairmanship of the Board, where he served until early 1970.

The next chapter presents an overview of the remainder of the Fed's 100-year history. It summarizes the crucial names involved in the Fed's policymaking and dates of critical turning points in its policy design, implementation, and communication. The chapter then offers a brief narrative of developments after Chairman Arthur Burns took office in early 1970. Inflation worsened appreciably during that decade, in part because incipient policy firmness sparked political resistance before it could reach fruition. The pace at which businesses were hiking their prices attained crisis speed late in the decade under Chairman G. William Miller. Such an environment became hospitable to the monetarist vision involving control of the money stock (currency and readily available deposits), partly because of the adverse consequences of its previous dismissal. Chairman Volcker introduced "practical monetarism" in October 1979, which lasted for three years. But even after the FOMC adopted a

different approach, inflation still diminished over the next quarter century. During his 18 and a half years as chairman, Alan Greenspan's Fed actually achieved price stability while moderating business fluctuations. But the easy policy stance during his last four-year term as chairman contributed to the concealed buildup of a housing bubble that ended up bursting early in Ben Bernanke's chairmanship.

Chapter 5 contains some generalities from a contemporary perspective regarding Fed's recent thinking about how the economy works and how the US central bank makes, conducts, and discusses its monetary policy. But just because the Fed has rather conventional views in accord with the mainstream doctrines of professional economists doesn't mean that those views are always right. Mostly they are, but we shall offer an alternative to the accepted New Keynesian theory of inflation relying on rational expectations in labor and product markets. Instead, we'll posit that the inflation expectations affecting wages and prices combine lagged inflation and the Fed's quantitative goal. This chapter may afford the reader useful background for the detailed chapters that follow on the Bernanke era, which of course can't avoid these issues.

Part II, consisting of four chapters, covers monetary policy during the chairmanship of Ben Bernanke. The rocky experience as the initial half year of his first chairmanship wound down is the subject of Chapter 6. His communication problems mainly weren't his fault but were a legacy of the last FOMC statement supervised by Chairman Greenspan. It took until mid-year for the new chairman to extricate himself. Even during the apparently warranted policy hiatus from late June 2006 until September of the next year, underlying trouble was brewing. The Fed's newly found policy seemed successful on the surface but was not destined to last. The central bank was about to face its most severe challenge since the Great Depression of the 1930s. Chapter 7 first recounts how the seeds of financial disaster already had been sown beneath the surface. After its overt outbreak, the Fed responded in part with unusual lending and then episodic quantitative easing that caused the size of its balance sheet to mushroom. After the financial shock subsided, the Fed adopted several new policy initiatives.

The next chapter covers part of Bernanke's second four-year term as chairman, which began in early February 2010. The Fed kept busy adopting a second round of quantitative easing (QE2), starting press briefings, offering explicit forward guidance about the expected start of policy tightening, rediscovering operation twist, postponing the explicit date of its anticipated policy firming, and presenting projections of the funds rate. Then, in August 2012 at Jackson Hole, as Chapter 9 also describes, the chairman hinted strongly that QE3 was imminent. The chapter next examines how that day came to pass in September, along with another extension of the expected date of the liftoff of firming, while at year-end the Fed augmented its large-scale purchases and introduced economic guideposts rather than a calendar date to signal its anticipation of tightening. The Fed maintained the pace of its open-ended asset purchases during 2013, even after suggesting that it could start tapering well before year-end. But it decided in December to begin early in 2014. The chapter continues with a US application of the novel theory of inflation in Chapter 5. A rising but fairly constant uptrend of core consumer prices has occurred, though it will remain below the Fed's 2 percent target so long as economic slack persists. An epilogue examines

the radical new methods that the Fed has devised for tightening policy in the face of post-crisis massive excess reserves.

Part III, consisting of four chapters and an appendix, recounts related developments in the Bernanke epoch. Chapter 10 takes up a defensible posture toward taxing and spending. It then addresses Bernanke's advocacy of gradual consolidation as opposed to an abrupt dive off the fiscal cliff. The chapter finally draws on a novel analysis in its appendix to explain how a threshold for federal debt to income would become important once investors are forced to contemplate possible tax hikes or default on interest or principal, how monetary and fiscal policies interact, how the start of interest payments on bank balances alters the meaning of different debt concepts, and how QE3 would affect the looming fiscal catastrophe.

Our attention in Chapter 11 shifts to regulatory and supervisory policy, not only at the Fed but in a broader legislative context. We compare the Aldridge report published *before* the establishment of the Federal Reserve System with the report of the Financial Crisis Inquiry Commission released *after* the Dodd-Frank Act had been signed into law. Then the chapter evaluates the Dodd-Frank Act itself. Chapter 12 explains the lack of criminal prosecutions after the crisis. It next examines the account by *Bloomberg* of the Fed's massive emergency lending in the midst of the financial turbulence. It ends by worrying about the potential effects on the Fed's independence in conducting its traditional monetary policy of its unorthodox lending, its later reliance on quantitative easing, and its new responsibilities for macroprudential policies.

Chapter 13 interrupts our domestic focus by applying the new theory of inflation advanced in Chapter 5 to three other geographic areas around the globe. The chapter begins by explaining the prolonged mild but stable deflation in core consumer prices (excluding food and energy) in Japan. Then, the text treats the Bank of England's experience with inflation targeting, quantitative easing, and forward guidance. Finally, the chapter examines the trembling in the Euro-zone after the currency and debt crisis erupted, the later relief delivered by the European Central Bank, as well as its response to the more recent threat of deflation.

Chapter 14 is a summary and conclusion. It first assesses some controversial policy issues in earlier eras, including what really caused the Great Depression, why money growth doesn't actually induce inflation, and whether sizable fiscal deficits and the associated debt explosion are damaging. This final chapter then considers the merits of entrusting ivory-tower economists with monetary policymaking, a subject rendered inevitable by the reference in the book's opening passages to "Those Marble Tower Boys!" It concludes by trying to fathom what the preceding history really means.