

“A Look Back at the History of the Federal Reserve”

August 29, 2013

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The Federal Reserve, like many other central banks around the world, has been on the hot seat ever since the astonishing events of the financial crisis of 2008. Views about the Federal Reserve span a wide range, from those who would abolish the Federal Reserve outright and return to the pre-Fed monetary regime that tied the value of money to the value of gold, to those who applaud the institution for heroically preventing a repeat of the Great Depression. In between there are those who propose reforms to the legislation governing the Fed, and others who would leave the Federal Reserve Act alone but encourage the Fed to learn the right lessons from the crisis. Why the divergent views? Public debate has focused on the unprecedented interventions in financial markets and with failing financial firms and the unique operational independence the Fed enjoys relative to other government entities.

In our time together, I'll try to help you understand the current controversies surrounding the Fed.¹ To really understand these controversies, it helps to understand some of our unique characteristics as a central bank. And to do that, I'll argue that it's essential to go back to the founding of the Federal Reserve System in 1913 and learn why we were founded and why we were structured the way we were. It turns out that those who created the Federal Reserve 100 years ago wrestled with the same two critical questions that animate debate today: (1) our independence, that is, the structure of our governance and our accountability to the American people, and (2) what sort of assets the Federal Reserve Banks should invest in. These questions were hotly debated when the Fed was founded. I believe that the trade-offs and tensions involved are essential for an appreciation of the current debates and how central banking is likely to evolve as we enter our second century. Views on these questions differed then, just as views differ now. In that connection, I should caution that the views I will share with you are my own and do not represent the official views of the Federal Reserve System.

So let's cast our minds back 100 years to the signing of the Federal Reserve Act by President Woodrow Wilson on December 23, 1913. Why did the founders feel the need to create something like the Federal Reserve? The short answer they would have given is, “the currency problem,” by which they meant that the supply of currency did not expand and contract appropriately with the needs of the economy. This was evident during seasonal increases in the need for money, and during banking panics, when people wanted to withdraw their bank deposits

and hold currency instead. When people talked about the Fed's role in coping with financial panics, what they had in mind was expanding the currency supply.

Money and Banking Before the Fed

But to understand the currency problem, you have to know a little bit about how money and the banking system worked back then. It was different from what we're used to today. I should warn you that I'll be discussing some obscure workings of the banking system back then, but I think you'll see they're important to the story, so bear with me.

The most prominent feature of the U.S. banking system a hundred years ago was that it was incredibly fragmented. Laws prevented banks from operating branches, and as a result, there were a large number of individual banks. Banks generally had just one office, and essentially every little town had its own bank. There were nearly 30,000 banks in the United States in 1913. Laws limiting branching have gone away, and as a result, there are about 7,000 banks today.

What did people use for money? Coins, for one. They used gold coins, like this beautiful double eagle. But for small transactions, a gold coin of the right value would be impractically tiny. So large-value gold coins were supplemented by smaller-valued coins made out of silver or copper.

For very large transactions, however, coins were too bulky, and people preferred banknotes. Banknotes were paper currency issued by private banks. Here, I have to say a word or two about the National Bank Act, a law passed in 1863, during the Civil War.² It authorized the chartering of "national banks" by the federal government — up until that time, banks had been chartered by the states, who issued their own paper currency. The 1863 law authorized national banks to issue paper notes too, like the ones you see here, and a tax was levied on state bank notes that drove them out of circulation. National bank notes had to be backed by holdings of U.S. government bonds. This generated an immediate demand for government bonds, and so it helped finance the Civil War — or, more precisely, one side of the Civil War.

The process of issuing national banknotes was somewhat cumbersome. A national bank had to purchase the appropriate federal bonds; this was usually arranged through other banks in major financial centers. The bonds then had to be deposited with the U.S. Treasury, which then authorized the printing of notes by the Bureau of Engraving and Printing, using printing plates held by the Treasury. The notes were then shipped to the bank. The difficulty of this process plays an important role later in the story.³

Clearing and Settling Interregional Payments

The decades between the Civil War and the founding of the Fed saw rapid growth in interregional trade within the United States. Transportation networks were improving rapidly, and manufacturers were selling goods around the country. Making large payments at a distance posed special difficulties, however. Banknotes were poorly suited for the job because they were payable on demand to the bearer, and thus required insurance against theft when shipped. A convenient alternative was the check. If a check was lost or stolen, but someone presented it for

payment, the bank could refuse to pay, so checks are to some degree safer than banknotes. Checks became the payment instrument of choice in interregional trade.

To understand the founding of the Fed, it helps to grasp some of the details of how checks moved around the banking system back then.⁴ It will help to focus on a concrete example. So imagine a general store in Newport News in the 1890s that sells potbellied stoves made by a manufacturer in Brooklyn. The store owner writes a check drawn on his bank in Newport News, payable to the manufacturer, and mails it. The manufacturer deposits the check in his account at his Brooklyn bank. (Keep in mind that there wasn't an iPhone to scan the check into.)

Now what happens though? How does the Brooklyn bank get paid for the check drawn on the bank in Newport News? More generally, how did banks clear and settle checks? Two different institutional mechanisms developed to facilitate check clearing.

One was the clearinghouse.⁵ Any decent-sized city would have many individual banks, and they would band together in order to economize on the costs of presenting checks to each other for payment. Instead of each bank sending clerks directly to each of the other banks, they would send a pair of clerks to a central location. This engraving depicts the New York Clearinghouse some time in the 1850s. (This admittedly is earlier than 1913, but the operations basically looked the same, with the possible exception of the top hats and cutaways.) One clerk from each bank would move around the outside of the circle of desks, presenting bundles of checks in succession to clerks from the other banks. The clerk sitting behind the desk would tally the amount of checks presented by the other banks. After the presentation of checks was complete, clearinghouse clerks would collate and reconcile all the banks' tally sheets. At the end of the process, each bank has either a net obligation due to the clearinghouse, that is to the other banks, or else a net obligation due from the clearinghouse. They could either settle up that day, or carry over the balance to the next day.

Clearinghouses were an important feature of the banking system, both before the Fed and for many years after. In fact, as I'll discuss later on, the Federal Reserve Banks were modeled after the clearinghouses of the time, and several of their features were adopted for the Reserve Banks. First, banks that were members of the clearinghouse were often owed funds by the clearinghouse — that is, by other clearinghouse banks. As a result, member banks had a keen interest in each other's financial health. So clearinghouses set standards for membership, required periodic financial statements and regularly audited their member banks. In other words, clearinghouses performed functions very much like the supervision and regulation now performed by federal agencies, including the Federal Reserve. A second key feature of clearinghouses is that they were owned by their member banks. A board of directors, chosen by member banks, would set clearinghouse policies and rules and oversee the operations of the clearinghouse. Each Reserve Bank is overseen by its own board of directors.

Clearinghouses worked well in cities, where sending couriers to a central location every day was convenient. But outside the cities, banks were geographically dispersed. Here's where the second institutional mechanism used to clear checks comes in. It was called "correspondent banking."⁶ All the banks outside the cities — they were called "country banks" — established relationships with a number of other banks; these were called their "correspondents." If the country bank

received a check drawn on a distant bank, it would be sent to a correspondent to collect for them. Similarly, if the city correspondent bank received a check drawn on the country bank, they would send it to the country bank for payment. This slide shows a page from a publication that listed each bank and their correspondents. So if you were a bank in Brooklyn, and one of your customers deposited a check drawn on, say, the First National Bank of Newport News, you would just look them up in this book and find out who their correspondents were. The correspondents are listed at the bottom of their entry — I've outlined them in a red box. You could send it to the correspondent and get paid for it.

One critical feature of this system is that banks kept deposits with their correspondents. So the First National Bank of Newport News would have accounts with the banks listed at the bottom of its entry. These were called “reserve accounts” or just “reserves,” and they played a critical role in the banking system. When checks came in to the city bank drawn on the correspondent country bank, the city bank would subtract (or debit) the amount from the country bank's account. Similarly, when the country bank sent checks for the city bank to collect for them, the city bank would add (or credit) the amount to its account.

If you multiply this picture across the nation, you end up with an intricate web of correspondent relationships linking very small country banks to larger banks in nearby cities to banks in the very largest financial centers — New York and Chicago. Through this network of relationships, people were able to make payments easily to people at great distances across the United States, analogous to the way electronic payment systems, like the credit card and ATM networks, link banks together in a way that enables payments to flow. The economics are very similar, it turns out.

The “Currency Problem”

I have given you an overview of the internal workings of the banking system in 1913, just before the Fed was founded. So what was the problem with this system that motivated the founding of the Fed? One word: inelasticity. At times, the supply of currency just did not expand rapidly and flexibly enough. Here's an illustration of that idea in a cartoon from 1909. Uncle Sam is pictured in the foreground, staring forlornly at a sheaf of wheat. His suspenders — they called them “galluses” then — are labeled “U.S. currency.” His buttons are labeled “financial center.” In the background, President Teddy Roosevelt explains the problem to a man labeled Congress:

“You see, those galluses ought to have rubber in them, so that when Uncle Sam stoops to move the sheaf there won't be much strain on the buttons.”

To understand what they were talking about, think of the banking system as a whole; the public can hold bank deposits or banknotes. At times, people prefer more notes and fewer deposits than usual. One of those times was the fall harvest season, when more currency was needed to make the payments necessary to move crops to market; picture middlemen needing cash to pay farmers, who then use the cash to pay for supplies or repay loans. The holiday season in November and December was another time when the demand for currency rose; picture lots of people getting currency out of the bank to go shopping. But remember those cumbersome requirements associated with issuing new banknotes under the National Bank Act. That meant

the banks found it difficult to issue new notes. Country banks would turn to their correspondents for notes to meet the demand for withdrawals, which transmitted the strains to the big financial centers. The banking system had a hard time accommodating the increase in demand for currency. What was needed was a more elastic supply.

Those of you who have had an economics class are probably thinking, what about the price system? Isn't that how economies deal with scarcity? Well, the workings of the price system actually were evident back then. The price of money, as you economics students are aware, is the rate of interest — that's the opportunity cost of holding noninterest-earning currency, as opposed to holding interest-earning assets. Here is a plot (the blue line) of the average interest rate on commercial paper in New York (a good representative financial market interest rate in those days), shown for various months of the year in the 20 years before the founding of the Fed. You can see that from September through December, interest rates were substantially higher, about a full percentage point on average, compared to other months of the year. This is fairly direct evidence of the inelasticity that people were concerned about. After the founding of the Fed (the gold line), the curve is relatively flat, which is evidence that the Fed was able to better accommodate the seasonal swings in the demand for currency.⁷

The inelasticity problem was also evident during financial panics. These were episodes, generally during economic downturns, in which a sizeable number of people attempted to withdraw their money from banks. In other words, the public wanted to shift out of deposits into currency. These “bank runs” tended to happen in response to rumors of insolvency at one or more banks. Again, the cumbersome and time-consuming process for issuing new banknotes under the National Bank Act limited the response in the total supply of notes. Interest rates would spike up, as banks attempted to secure banknotes to meet the demand for withdrawals.

Banks turned to a number of expedients when faced with runs. One response when demand for notes was particularly acute was to “suspend payments,” meaning that banks would refuse to allow depositors to withdraw banknotes. At times, clearinghouses would declare suspensions for all their member banks. Often deposits weren't entirely frozen, however. Banks would issue “cashier checks” or other instruments that acted as substitutes for currency. These substitutes were viewed as inconvenient stop-gap measures, however.

Earlier I mentioned that country banks held deposits at correspondent banks. When their customers' withdrawals started rising, country banks would ask their correspondent banks for shipments of banknotes, to be paid for with their reserve account balances. During financial panics, clearinghouse banks would sometimes refuse those withdrawal requests in order to preserve cash for themselves.

The Panic of 1907 was the last straw; it sparked a concerted national effort to identify appropriate reforms to the currency system. Much debate ensued and numerous proposals were advanced, culminating in passage and signing of the Federal Reserve Act in December of 1913.⁸ What did the Federal Reserve Act do? According to the preamble of the Act, the intent was “to furnish an elastic currency.” That is, they wanted the aggregate supply of currency to be able to expand when the demand for currency rose, as it did during seasonal crop movements and the large-scale deposit withdrawals associated with banking panics. You'll also notice that the

preamble says “to afford a means of discounting commercial paper.” I’ll say more about that later.

The Federal Reserve Act

How would the Federal Reserve furnish an elastic currency? The natural model was the city clearinghouses.⁹ In banking crises, the clearinghouses often issued certificates to be circulated by their member banks as a substitute for currency withdrawals. (The clearinghouses were not legally entitled to issue bank notes themselves.) Therefore, the Act authorized the establishment of a set of banks modeled on the clearinghouses of the day. They called them “federal reserve banks,” because they would hold the reserves of the banking system, instead of having those reserves held in the banks in large cities. Reserve banks would have the power to issue notes, just as the national banks did at the time, except that the reserve banks would not be subject to the cumbersome requirements of the National Bank Act that made the supply of notes so inelastic.

Because the reserve banks were modeled after the clearinghouses, it was natural to provide them with the other features associated with clearinghouses. Thus the reserve banks were membership organizations, owned and operated by their member banks, much like a joint venture. They were given authority to examine their members for safety and soundness, just as the clearinghouses did.¹⁰ And they were given the power to clear and settle checks for their members as well, a core function of the clearinghouses.¹¹

Key Issue: Structure, Governance and Accountability

Perhaps the most visible aspect of the structure of the Federal Reserve was hotly debated: the number and location of the reserve banks themselves. One early version of the Federal Reserve Act would have created a single reserve bank with branches around the country. This riled populists, however, and tapped into the deep-rooted 19th century American aversion to large financial institutions and financial center interests. Carter Glass, the congressman from Lynchburg, Virginia, who chaired the House Committee on Currency and Banking and helped draft the final version of the legislation, insisted on a system of regional reserve banks.

President Woodrow Wilson, however, a leader of the progressive movement, insisted that because the reserve banks had a substantial public purpose, they should be supervised by a federal agency. So the Act established what is now called the Board of Governors of the Federal Reserve System to oversee the operations and policies of the reserve banks. The Board also has the power to appoint three of the nine members of each Reserve Bank’s board of directors — the other six are elected by member banks, and only three of them can be bankers. Members of the Board of Governors are appointed by the president of the United States and confirmed by the Senate. The Federal Reserve thus was created with a hybrid public-private governance structure. This structure has provided a measure of independence from political pressures that can induce an excessively short-run focus. That independence has been valuable, particularly in keeping inflation under control. But it comes with a responsibility to be accountable to our democratic institutions for the results of the conduct of policy.

The Fed's governance structure also was hotly debated during the drafting of the legislation. It has been questioned and amended over the years and remains controversial today. For example, critics have charged that the role of bankers on Reserve Banks' boards has biased them toward the interests of the banking industry, at the expense of the public interest. Others, however, cite the valuable operational expertise and economic information that bankers bring to the Fed. The financial reform legislation passed in 2010 in response to the financial crisis — the Dodd-Frank Act — imposed restrictions limiting the role of bankers in selecting the top officers of the Reserve Banks.¹² More broadly, the Federal Reserve has made significant moves toward greater transparency into its operations and decision-making over the last 20 years. This photo shows a gathering of all the Reserve Bank directors and the Board of Governors in October 1914, assembled on the steps of the Treasury in Washington. If the analogous group were assembled today, I can assure you of two things: You'd see greater diversity and fewer hats.

Key Issue: What Assets Should the Federal Reserve Hold?

Perhaps the most critical question the founders had to decide was what the Reserve Banks should hold as assets. The Federal Reserve notes that were authorized by the Act are liabilities of the Reserve Banks. The Reserve Banks also accepted deposits from member banks, another liability. The original goal of the founding of the Federal Reserve was to ensure that the quantity of the Fed's currency and reserve deposit liabilities would expand elastically when needed. This left the authors of the Act with some discretion as to what assets the Federal Reserve Banks would hold.

One asset that was natural to consider was gold, either in the form of coins or bullion. The country was on the gold standard at the time, and that required that banknotes be convertible into gold on demand. The founders decided to mimic the design of other central banks and require that Reserve Banks hold a certain amount of gold — 40 percent of the value of their notes outstanding, and 35 percent of the value of the bank deposits they accepted. This ensured that the Reserve Banks' money supply would tend to expand or contract with the movement of gold into and out of the country, as required by the rules of the gold standard.

But beyond gold, what assets should the reserve banks hold? One option was U.S. government bonds. The pre-Fed regime that required backing by government bonds was viewed as problematic, however, for the reasons I've already described. In addition, money backed only by government bonds was associated with inflationary wartime finance and thus viewed as potentially destabilizing. That left private-sector assets. There were active markets for private bonds, but these were relatively risky at the end of the 19th century, and stocks were even riskier. European central banks at the time, particularly the Bank of England, provided a natural alternative model, however. They held financial instruments called "bills of exchange"; similar instruments in the United States were called commercial paper. These were short-term (3- to 6-month maturity) obligations that arose out of the financing of trade. Because they were secured by goods in transit and endorsed by banks, they were relatively safe. Conservative eligibility requirements and an endorsement by the borrowing bank (a kind of guarantee) helped further reduce the risk to the central bank. So the Federal Reserve Banks were given the authority to make loans backed by certain types of commercial paper or purchase certain types of such commercial paper. This is reflected in the third part of the preamble purpose of the Federal Reserve Act: "to afford a means of rediscounting commercial paper." They called it

“rediscounting,” because the initial loan was essentially the purchase of an obligation at discount, which reflected an implied interest rate, and the Fed was discounting it a second time.

During World War I, the Reserve Banks were granted the power to hold Treasury securities, and thereafter they used purchases of Treasury securities in the open market to influence monetary conditions. Acquiring Treasury securities in the open market avoided the cumbersome collateral-posting procedure required under the national bank rules. It is important to note that the Fed creates money whether it buys Treasury securities, buys commercial paper or makes a loan. When a Reserve Bank acquires an asset, it credits the reserve account of the bank of the party from whom it acquires the asset. When a Reserve Bank makes a loan, it credits the reserve account of the party to whom it is making a loan. In either case, the new reserve account balances can be withdrawn by the bank, and Federal Reserve notes would be paid out, effectively converting the reserve balances into currency. In either case, the supply of currency plus reserves has increased. The key lesson here is that, for the purposes of the original goal of the Federal Reserve Act — that is, to solve the currency problem that the Fed was founded to solve and stem financial panics — it doesn’t matter whether the Fed lends or buys Treasury securities. Either one expands the supply of currency and reserves that people are clamoring for.

This highlights an important distinction regarding central bank activities. Some actions change the total amount of currency and bank reserves in circulation. These are best referred to as “monetary policy.” Actions that change the composition of the central bank’s asset portfolio, but leave the amount of currency and bank reserves unchanged can be thought of as “credit policy,” since they involve intervening in credit markets by buying one instrument and selling another.¹³ Credit policy has the potential to direct funds to particular sectors or particular private entities, either funds they would not otherwise have obtained or on terms they would not otherwise have obtained. The “currency problem” that the founders were seeking to solve was a monetary problem, not a credit problem.

This distinction is directly relevant to controversies about the Fed’s crisis lending programs, because they had little to do with monetary policy, in this sense, and thus little to do with the original goal of the Federal Reserve Act to furnish an elastic currency. Several emergency lending programs were introduced early in the crisis, prior to September 2008.¹⁴ Lending under these programs was all offset by sales of Treasury securities, so the supply of currency plus reserves did not increase. Instead, the lending programs reallocated credit, effectively selling Treasury securities to the public and using the proceeds to provide funds to private entities on terms they would not otherwise have obtained in the marketplace. Similarly, the loan made in connection with the failure of Bear Stearns in March 2008 was offset through sales of Treasury securities. Because the Reserve Banks remit all of their excess earnings to the U.S. Treasury, the fiscal implications for the federal budget were exactly as if the Treasury had issued new debt and made the loan.

Later, in the fall of 2008, the Fed drove short-term interest rates essentially to zero and stopped offsetting emergency lending. Clearly, though, the Fed could have driven interest rates to zero without the emergency lending programs by simply buying large quantities of Treasury securities. Since the crisis, the Fed has dramatically expanded the size of its asset holdings by acquiring longer-term Treasury securities and agency mortgage-backed securities, or MBS. The

Fed could have expanded its portfolio an equal amount through purchases of Treasury securities only. Compared to that benchmark policy, buying agency MBS channels funds to mortgage borrowers, financed through sales of Treasury securities to the public.

In popular accounts of the crisis, you may have come across references to the Fed as “the lender of last resort.” This phrase is often used to describe the prescriptions of Henry Thornton, the British economist, and Walter Bagehot, a British essayist and journalist. Both men wrote influential books on central banking: Thornton at the beginning of the 1800s, and Bagehot in the 1870s. Their recommendations to the Bank of England have been distilled into the phrase: “Lend freely at a high rate on good collateral.”¹⁵ This dictum is often invoked to support extensive central bank lending in episodes of financial distress. But Thornton and Bagehot wrote when lending was the primary mechanism by which the Bank of England increased the stock of money in circulation. Their writings make clear that they were not recommending rescues for insolvent institutions, and that their prescriptions were about monetary policy, not credit policy.

The Debate Continues: The Future of Central Banking

Some modern writers instead interpret the “lender of last resort” idea liberally to justify an expansive approach to central banking, in which all available tools, both monetary and credit policy, are used to minimize financial system “disruptions.” They read central bank charters as implying a “financial stability mandate.”¹⁶ Although the term “financial stability” was not at all common 100 years ago, they construe the founders of the Federal Reserve System as motivated by a broad desire to minimize and prevent financial panics, even beyond simply satisfying increased demands for Federal Reserve Bank money. The view that financial markets are inherently fragile and unstable provides support for this approach.¹⁷

In contrast, a narrow and more restrained view of central banking emphasizes the critical core function of managing the monetary liabilities of the central bank.¹⁸ Experience after the demise of the gold standard in the 1970s has demonstrated that a measure of independence is a critical ingredient in the success of monetary policy. Aggressive use of a central bank’s asset portfolio to channel credit to particular economic sectors or entities threatens dragging the central bank into distributional politics and places that governance arrangement at risk.¹⁹ This more limited approach is supported by the view that excessive financial market instability tends to be induced by government rescues, and that policymakers should be humble about their ability to identify constructive interventions in particular financial markets.²⁰

The evolution of the Federal Reserve, and central banking more generally around the world, will be driven, I suspect, by how the tension between these two approaches plays out. I just hope that future debates are informed by the rich deliberations that accompanied the founding of the Federal Reserve.

¹ I am grateful to Patricia Wescott for assistance in preparing these remarks.

² Milton Friedman and Anna Jacobson Schwartz. “A Monetary History of the United States: 1867–1960,” Princeton: Princeton University Press, 1963; Allan H. Meltzer, “A History of the Federal Reserve, Volume 1,” Chicago: University of Chicago Press, 2003; and Bruce Champ, “The National Banking System: A Brief History,” Federal Reserve Bank of Cleveland Working Paper 0723, December, 2007.

³ Bruce Champ, Neil Wallace, and Warren E. Weber, “Resolving the National Bank Note Puzzle,” Federal Reserve Bank of Minneapolis Quarterly Review, Spring 1992, vol. 16, iss. 2, pp. 13-21.

⁴ See Jeffrey M. Lacker, Jeffrey D. Walker, and John A. Weinberg, “The Fed’s Entry into Check Clearing Reconsidered,” Federal Reserve Bank of Richmond *Economic Quarterly*, v. 85/2, Spring 1999, pp. 1-31.

⁵ James G. Cannon, “Clearing-Houses: Their History, Methods and Administration,” London: Smith, Elder, & Co., 1900; and James G. Cannon, “Clearing Houses,” National Monetary Commission, Government Printing Office: Washington, D.C., 1910.

⁶ See Spahr (1926).

⁷ Jeffrey A. Miron, “Financial Panics, the Seasonality of the Nominal Interest Rate, and the Founding of the Fed,” *American Economic Review*, March 1986, vol. 76, no. 1, pp. 125-140.

⁸ On the creation of the Fed see Elmus Wicker, “The Great Debate on Banking Reform: Nelson Aldrich and the Origins of the Fed,” Columbus, OH: Ohio State University Press, 2005; and Eugene White, “The Regulation and Reform of the American Banking System, 1900-1929,” Princeton: Princeton University Press, 1983.

⁹ Charles Goodhart, “The Evolution of Central Banks,” Cambridge, Ma.: MIT Press, 1988; Richard Timberlake, “The Central Banking Role of Clearinghouse Associations,” *Journal of Money, Credit and Banking*, February 1984, vol. 16, pp. 1-15; Gary Gorton, “Clearinghouses and the Origin of Central Banking in the United States,” *Journal of Economic History*, June 1985, vol. XLV, no. 2, pp. 277-283; and Gary Gorton and Donald Mullineaux, “The Joint Production of Confidence: Endogenous Regulation and Nineteenth Century Commercial-Bank Clearinghouses,” *Journal of Money, Credit and Banking*, November 1987, vol. 19, pp. 457-468.

¹⁰ National banks were already supervised by the Comptroller of the Currency, as they are today, so the reserve banks were just given authority to supervise the state banks that joined the Federal Reserve System.

¹¹ See Lacker, Walker and Weinberg (1999).

¹² Specifically, section 1107 of the Dodd-Frank Act says that only Class B directors (nonbankers elected by member banks) and Class C directors (appointed by the Board of Governors) can elect the president and first vice president (chief operating officer) of the reserve bank.

¹³ This distinction is discussed at length by Marvin Goodfriend and Robert G. King, "[Financial Deregulation, Monetary Policy, and Central Banking](#)," Federal Reserve Bank of Richmond *Economic Review*, May/June 1988, vol. 74, no. 3, pp. 3-22.

¹⁴ These were the Term Auction Facility and the Primary Dealer Credit Facility. See <http://www.federalreserve.gov/monetarypolicy/bst.htm> for detailed information on the Board of Governors’ website on all of the Fed’s credit and liquidity programs. See <http://timeline.stlouisfed.org/> for a financial crisis timeline.

¹⁵ Henry Thornton, “An Enquiry Into the Nature and Effects of the Paper Credit of Great Britain,” 1802, Edited and with an Introduction by F.A. Von Hayek, New York: Rinehart and Co., 1939. Walter Bagehot, “Lombard Street,” London: Harry S. King and Co., 1873. For explanation and discussion of Thornton and Bagehot’s views on the lender of last resort, see Thomas M. Humphrey, “Lender of Last Resort: The Concept in History,” Federal Reserve Bank of Richmond *Economic Review*, March/April 1989, pp. 8-16; and Michael D. Bordo, “The Lender of Last Resort: Alternative Views and Historical Experience,” Federal Reserve Bank of Richmond *Economic Review*, January/February 1990, pp. 18-29.

¹⁶ See Bank for International Settlements, “Central bank governance and financial stability,” May 2011, <http://www.bis.org/publ/othp14.pdf> for an overview of financial stability mandates for central banks.

¹⁷ See Jeffrey M. Lacker, “Economics and the Federal Reserve After the Crisis.” Speech at Franklin and Marshall College, Lancaster, PA, February 12, 2013, and “Understanding the Interventionist Impulse of the Modern Central Bank,” Speech at Cato Institute 29th Annual Monetary Conference, Washington, D.C., November 16, 2011.

¹⁸ See Jeffrey M. Lacker, “Perspectives on Monetary and Credit Policy,” Speech to the Shadow Open Market Committee Symposium, New York, NY, November 20, 2012.

¹⁹ Marvin Goodfriend, “The Elusive Promise of Independent Central Banking,” Bank of Japan, Monetary and Economic Studies, November 2012, vol. 30, pp. 39-54.

²⁰ See Jeffrey M. Lacker, “Economics and the Federal Reserve After the Crisis.” Speech at Franklin and Marshall College, Lancaster, PA, February 12, 2013.