



**The Federal Reserve's Role: Actions Before, During, and After the 2008
Panic in the Historical Context of the Great Contraction**

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This paper examines the Federal Reserve's actions before, during and after the 2008 financial crisis. It looks to the Great Contraction of 1929-1933 for historical context of the Federal Reserve's actions.

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Introduction

The financial crisis of 2007-2008 has been viewed as the worst since the Great Contraction of the 1930s. It is also widely believed that the policy lessons learned from the experience of the 1930s helped the US monetary authorities prevent another Great Depression. Indeed, Ben Bernanke, the chairman of the Federal Reserve during the crisis, stated in his 2012 book that, having been a scholar of the Great Depression, his understanding of the events of the early 1930s led him to take many of the actions that he did.

This chapter briefly reviews the salient features of the Great Contraction of 1929-1933 and the policy lessons learned. I then focus on the recent experience and examine the key policy actions taken by the Fed to allay the crisis and to attenuate the recession. I then evaluate Fed policy actions in light of the history of the 1930s. My main finding is that the historical experience does not quite conform to the recent crisis and, in some respects, basing policy on the lessons of the earlier crisis may have exacerbated the recent economic stress and have caused serious problems that could contribute to the next crisis.

The Great Contraction story

The leading explanation of the Great Contraction from 1929 to 1933 is by Milton Friedman and Anna Schwartz in *A Monetary History of the United States: 1867 to 1960* (1963a). They attributed the Great Contraction from 1929 to 1933 to a one-third collapse of the money supply brought about by a failure of Federal Reserve policy to prevent a series of banking panics from 1930 to 1933. The Friedman and Schwartz story was augmented by Bernanke (1983). Like Friedman and Schwartz, he attributed the Great Contraction to monetary forces and especially the collapse of the banking system. However, unlike them, he placed less emphasis on the effects via the quantity theory of money on spending and more on the consequences of the collapse of the banking system in raising the cost of financial intermediation and creating a credit crunch.

The Great Contraction was preceded by the Wall Street boom and rapidly growing economy of the Roaring Twenties. The Friedman and Schwartz story began with the Fed tightening policy in early 1928 to stem the stock market boom. Fed officials believing in the real bills doctrine were concerned that the asset boom would lead to inflation. Recent evidence suggests that the stock market boom, as well as an earlier housing boom in the

mid-1920s, was in part fueled by the Federal Reserve's pursuit of an expansionary monetary policy beginning in 1926 (White 2009; Bordo and Landon-Lane 2013b).¹

The subsequent downturn beginning in August 1929 was soon followed by the stock market crash in October. The New York Fed reacted swiftly to the stock market crash by lowering its discount rate, lending heavily to the money center banks, and purchasing government securities in the open market. This action prevented the stock market crash from leading to a banking panic as had often occurred before the establishment of the Federal Reserve System. Thereafter requests by the New York Fed to the board for additional easing were rejected and the Fed failed to prevent four banking panics that followed between October 1930 and March 1933.

According to Friedman and Schwartz, the banking panics worked through the money multiplier to reduce the money stock (via a decrease in the public's deposit currency ratio). The panic in turn reflected what Friedman and Schwartz called a "contagion of fear" as members of the public—fearful of being last in line to convert their deposits into currency—staged runs on the banking system, leading to massive bank failures. In today's terms this would be a liquidity shock.

The collapse in money supply in turn led to a decline in spending and, in the face of nominal rigidities, especially of sticky money wages, and also a decline in employment and output (Bordo, Erceg, and Evans 2000). The process was aggravated by banks dumping their earning assets in a fire sale and by debt deflation (deflation which increased the real value of nominal debt), which weakened the net worth of firms and households and weakened bank balance sheets.

According to Friedman and Schwartz, had the Fed acted as a proper lender of last resort (as it was established to be in the Federal Reserve Act of 1913), it would have offset the effects of the banking panics on the money stock and prevented the Great Contraction.

The principal exception to the Fed's inaction was a brief interlude from April to August 1932 when, under pressure from the Congress, the Fed engaged in a massive \$1 billion open market purchase (\$16 billion in today's prices or 2 percent of 1932 GDP). This expansionary monetary policy reversed the decline in money supply, greatly reduced interest rates, and led to a quick revival in industrial production and real output. In many respects the 1932 interlude was a prelude to the policies of quantitative easing in Japan in the 2000s and in the United States today.

The Fed reversed course and ended the purchases in the summer of 1932 because of its fear of the expansionary policy rekindling stock market speculation and inflation and

¹ In 1931 Adolph Miller, member of the Federal Reserve Board, blamed the stock market crash and the depression on Benjamin Strong, former governor of the New York Fed, for keeping interest rates unusually low in 1926 to help Britain stay on the gold standard. This policy, he argued, fueled the Wall Street boom.

threatening gold convertibility. The depression continued, culminating in the banking panic in early 1933. Friedman and Schwartz posit that had the expansionary policy continued, the contraction would have ended much earlier than it did.

An extensive literature has posited several explanations for the Fed's failure as a lender of last resort (Bordo and Wheelock 2013). These include: 1) flaws in the System's structure which impeded coordination between the Federal Reserve Board and the Reserve banks, especially after the death of Benjamin Strong in 1928 (Chandler 1956; Friedman and Schwartz 1963a); 2) devotion to the gold standard which kept the Fed from following expansionary policies to offset banking panics (Temin 1989; Eichengreen 1992); 3) adherence to a flawed policy framework that relied on nominal interest rates and the level of discount window borrowing as policy guides (Meltzer 2003; Wheelock 1991); and 4) the failure of the Federal Reserve Act to provide a discount mechanism and money market environment of the sort that enabled the Bank of England and other European central banks to function effectively as lenders of last resort.

This was manifest in three flaws: 1) the reluctance of member banks to turn to the discount window in times of stress (the "stigma problem"); 2) the Fed's limited membership and the fact that, except in extreme circumstances, only member banks had access to the discount window; and 3) the restrictive eligibility requirements on collateral posted for borrowing at the Fed's discount window.

The Great Contraction ended in March 1933 when newly elected President Franklin Delano Roosevelt declared a one-week nationwide banking holiday during which bank examiners weeded out the insolvent banks. The institution of the Federal Deposit Insurance Corporation (FDIC) in 1934 solved the problem of panics. FDR also ended the link to the gold standard in April 1933 and later devalued the dollar by close to 60 percent. A rapid recovery and reflation from 1933 to 1936 was fueled by expansionary Treasury gold and silver purchases and a rise in commodity prices. This was helped by the devaluation and by gold inflows induced by capital flight from Europe, which increased the money supply (Romer 1992). The Federal Reserve, which continued to maintain its policy of inaction, had little to do with the recovery (Meltzer 2003).

The Roosevelt administration blamed the banks, other financial institutions, and the Federal Reserve for the contraction. The Banking Acts of 1933 and 1935 made significant changes in the structure and authority of the Federal Reserve System. The acts concentrated policymaking authority within the Board of Governors, expanded the Fed's ability to lend on the basis of any sound collateral, and authorized the Fed to lend to nonfinancial firms in a crisis (section 13(3)).

In addition, the banking system was subject to major reform, including the introduction of federal deposit insurance; the forced separation of commercial and investment banking (Glass-Steagall Act); the regulation of deposit interest rates (regulation Q of Glass-Steagall); and strict limits on market entry. These reforms were intended to enhance the

Fed's ability to respond to crises while making the banking system less vulnerable to instability (Bordo and Wheelock 2013, 34).

The Federal Reserve, after many years of denial and hostility to Friedman and Schwartz, accepted their lessons from the Great Contraction. On the occasion of Milton Friedman's ninetieth birthday Ben Bernanke apologized for the Fed: "I would like to say to Milton and Anna: regarding the Great Depression. You're right. We did it. We're very sorry. But thanks to you, we won't do it again" (Bernanke 2002).

In his 2012 lectures Bernanke emphasized two great shortcomings of the Fed in the Great Contraction: its failure to serve as a lender of last resort and its failure to use its tools of monetary policy to prevent deflation and the collapse of real economic activity. These lessons were not forgotten in the Fed's response to the crisis of 2007-2008 and the Great Recession.

The Crisis of 2007-2008 and the Great Recession

Like the 1929-1933 episode, the crisis of 2007-2008 in the United States was preceded by an asset price boom—in house prices. The end of the boom set in motion forces that triggered the crisis of 2007-2008. Government intervention in housing markets going back to the 1930s served as the backdrop to the crisis. The Federal Housing Administration and Fannie Mae were set up to encourage the development of the mortgage market and to provide housing finance.

In subsequent decades and especially in the 1990s, as argued by Rajan (2010), successive administrations and Congress pushed for affordable housing using the government-sponsored enterprises (GSEs) and allowed them to reduce their capital requirements. Lending was encouraged and rising prices raised the GSEs' profits, leading them to take on more risk. The FHA in the 1990s also took on riskier mortgages, reduced the minimum down payment to 3 percent, and increased the size of mortgages that would be guaranteed. The housing boom came to its climax in the George W. Bush administration, which urged the GSEs to increase their holding of mortgages to low-income households (Rajan 2010, 37). Between 1999 and 2007 national house prices doubled, according to the Standard and Poor's Case-Shiller repeat sales index.

The private sector also contributed heavily to the boom in an environment of loose regulation and oversight by the Federal Reserve and other agencies as they recognized that the GSEs would backstop their lending. During this period lending standards were reduced and practices like NINJA (no income, no job, no assets) and NO-DOC (no documentation) loans were condoned. These developments led to the growth of the subprime and Alt A mortgages which were securitized and bundled into mortgage-backed securities and then given triple-A ratings. Mortgage-backed securities (MBS) were further repackaged into collateralized debt obligations (CDOs). Credit default swaps

(CDSs) provided insurance on many of these products. Financial firms ramped up leverage and avoided regulatory oversight and statutory capital requirements with special purpose vehicles (SPVs) and special investment vehicles (SIVs). These factors encouraged a lending boom (Bordo and Meissner 2012).

The boom was fueled by expansionary monetary policy by the Federal Reserve after the tech bust of 2001. Low policy rates were kept in place until 2005 to prevent the economy from slipping into a Japan-style deflation. John Taylor (2007) has led the indictment of the Fed for fueling the housing boom in the early 2000s. Based on the Taylor Rule (Taylor 1993) he showed that the federal funds rate was as low as 3 percentage points below what a simple Taylor Rule would generate for the period 2002-2005. Taylor then simulated the path of housing starts had the Fed followed his rule over the period 2002-2005. His calculations suggest that most of the run-up in housing starts from 2002-2005 would not have occurred.²

The default on a significant fraction of subprime mortgages after the collapse of house prices produced spillover effects around the world—via the securitized mortgage derivatives into which these mortgages were bundled—to the balance sheets of investment banks, hedge funds, and conduits (which are bank-owned but off their balance sheets) which intermediate between mortgage and other asset-backed commercial paper and long-term securities. The uncertainty about the value of the securities collateralized by these mortgages spread uncertainty through the financial system. All of this led to the freezing up of the interbank lending market in August 2007.

In an attempt to allay what it perceived as a liquidity crisis, the Fed then both extended and expanded its discount window facilities and cut the federal funds rate by 300 basis points. A principal innovation was the Term Auction Facility (TAF) which allowed banks to bid anonymously for funds from the Fed. It was designed to encourage banks to go to the discount window by avoiding the “stigma problem” which had been so important in the 1930s.

The crisis worsened in March 2008 with the rescue of investment bank Bear Stearns by JP Morgan, backstopped by funds from the Federal Reserve. The rescue was justified on the grounds that Bear Stearns' exposure to counterparties was so extensive that a worse crisis would follow if it were not bailed out. The March crisis also led to the creation of a number of new discount window facilities whereby investment banks could access the window and which broadened the collateral available for discounting.

The next major event was a Treasury bailout and partial nationalization of the insolvent GSEs, Fannie Mae and Freddie Mac, in July 2008 on the grounds that they were crucial to the functioning of the mortgage market.

² For supporting evidence for many countries and over long periods, see Bordo and Landon-Lane (2013a and 2013b) and Ahrend, Cournede, and Price (2008).

Events took a turn for the worse in September 2008 when the Treasury and Fed—in an attempt to prevent moral hazard—allowed investment bank Lehman Brothers to fail in order to discourage the belief that all insolvent institutions would be saved. It was argued that Lehman was both in worse shape and less exposed to counterparty risk than Bear Stearns. After the crisis, Bernanke (2012a) argued that Lehman was allowed to fail because it was deemed insolvent and because the Fed lacked the legal authority to rescue it.

The next day the authorities bailed out and nationalized the insurance giant AIG, fearing the systemic consequences for collateralized default swaps if it were allowed to fail. The fallout from the Lehman bankruptcy then turned the liquidity crisis into a full-fledged global credit crunch and stock market crash as interbank lending effectively seized up on the fear that no banks were safe.

To stem the post-Lehman financial market panic, the Fed invoked section 13(3) of the Federal Reserve Act to extend the discount window to nonbank financial institutions and financial markets. The Fed created special liquidity facilities to provide funding to the money market mutual funds (MMMFs) which were clobbered by the collapse of Lehman and then to the commercial paper market that was funded by the MMMFs. Facilities for broker-dealers, asset-backed securities, and many other institutions and markets were created. Bernanke (2012a) justified the extension of access to the discount window as perfectly consistent with Walter Bagehot's (1873) strictures because they were backed by collateral (although not made at penalty rates). These policies, he argued, prevented the collapse of the global financial system.

In the ensuing panic, along with Fed liquidity assistance to the commercial paper market and the extension of the safety net to the money market mutual funds, the US Treasury (in the week after Lehman and AIG) sponsored its Troubled Asset Relief Plan (TARP) whereby \$700 billion could be devoted to the purchase of heavily discounted mortgage-backed securities and other securities to remove them from the banks' balance sheets and restore bank lending. The initial TARP package, which was only a two-and-a-half-page document, was rejected by the Congress, precipitating a major stock market crash and a spike in the OIS-Libor spread (the difference between the overnight indexed swap rate and the London interbank offered rate). TARP was later passed and, rather than in the original intent, most of the funds were used to recapitalize the major banks after a series of stress tests.

According to Taylor (2009), the uncertainty associated with the passage of TARP and the two about-faces between Bear Stearns and Lehman and then AIG were the key causes of the panic in September 2008, rather than the collapse of Lehman.

The crisis immediately spread to Europe and to the emerging market countries as the global interbank market ceased functioning. The Fed set up extensive inter-central-bank swap lines to keep open international liquidity. The United Kingdom authorities

responded by pumping equity into British banks, guaranteeing all interbank deposits, and providing massive liquidity. The European Union countries responded in kind. These actions ended the impending sense of financial doom.

After the financial crisis eased, the US economy continued to implode. Expansionary Federal Reserve policy at the end of 2008 lowered the federal funds rate to zero. Once the policy rate hit the zero nominal bound, the Fed initiated its policy of large scale asset purchases (LSAPs), commonly known as quantitative easing (QE)—open market purchases of long-term Treasuries and mortgage-backed securities. The original justification for this unorthodox policy was the portfolio adjustment mechanism of Friedman and Schwartz (1963b), Brunner and Meltzer (1973), and Tobin (1969). However, the QE program was supposed to affect the economy by a signaling channel as well.³ In addition to these channels, Woodford (2012) has emphasized the importance of forward guidance: communication by the Fed on the pace and timing of its QE purchases. He argues that forward guidance is much more important than the actual purchases. The Fed since 2012 has adopted this approach with, so far, limited success.

LSAP 1, which began in November 2008, was intended to purchase \$1.75 trillion of long-term securities, most of which were in agency MBS (mortgage-backed securities held by GSEs). It was followed in March 2010 by LSAP 2, in which the Fed would purchase \$600 billion of long-term Treasury bonds, and the Maturity Extension Program (MEP), which was a swap of short-term for long-term securities to extend the maturity of the Fed's portfolio. It was then followed by LSAP 3, in which the Fed purchased both MBS and long-term Treasuries.

Debate swirls over how effective the LSAP policies have been. LSAP 1 lowered long-term yields from 30 to 90 basis points depending on the study (Bernanke 2012b suggested they were higher).⁴ LSAP 2 was much less effective, lowering long-term Treasury bonds by, at most, 20 basis points.

These purchases more than tripled the Fed's balance sheet and have been held as excess reserves by the banks. Bernanke (2012b) posits that the LSAP programs increased real output by 3 percent and employment by two million jobs and effectively attenuated the recession in July 2009. This, he argued, made the unusually slow recovery from the Great Recession considerably faster than would otherwise have been the case.

The Financial Crisis of 2007-2008 and the Great Contraction compared: the Fed has misinterpreted history

³ Krishnamurthy and Vissing-Jorgensen (2011, 2013) have argued that the portfolio balance channel works through two narrow channels: a capital constraint channel and a security channel. They find that the purchase of MBS via their two channels has a stronger and more widespread impact than the purchase of long-term securities whose impact is much more localized.

⁴ Taylor and Stroebel (2012) find that purchases of MBS had virtually no impact.

Bernanke (2012a) and others have invoked the Great Contraction and especially the banking panics of 1930-1933 as a good comparison to the financial crisis and Great Recession of 2007-2009. In several figures below I compare the behavior of some key variables between the two events. I demarcate the crisis windows in the Great Contraction using Friedman's and Schwartz's dates. For the recent period I use Gorton's (2010) characterization of the crisis as starting in the shadow bank repo market and then changing to a panic in the shadow banking system and the universal banks after Lehman failed in September 2008 (light gray shading).

The signature of the Great Contraction was a collapse in the money supply brought about by a collapse of the public's deposit currency ratio, a decline in the banks' deposit reserve ratio, and a drop in the money multiplier (see figures 1 to 4). In the recent crisis, the M2 money supply did not collapse; indeed, it rose, reflecting expansionary monetary policy (figure 1). Similarly, the deposit currency ratio did not collapse in the recent crisis—it rose (figure 2). There were no runs on the commercial banks because depositors knew that their deposits were protected by federal deposit insurance, which was introduced in 1934 in reaction to the bank runs of the 1930s. The deposit reserve ratio declined (figure 3), reflecting an increase in banks' excess reserves induced by open market purchases and a positive spread between the interest rate on excess reserves and the federal funds rate, rather than by a scramble for liquidity as in the 1930s. The money multiplier declined in the recent crisis, reflecting the same forces (figure 4). Moreover, although a few banks failed in the recent crisis the numbers were miniscule relative to the 1930s, as were deposits in failed banks relative to total deposits.

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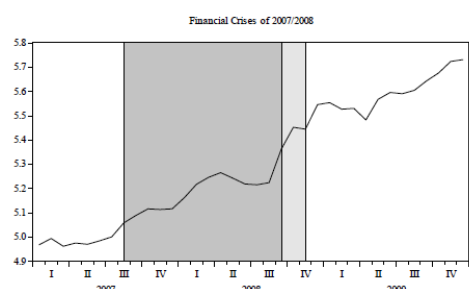
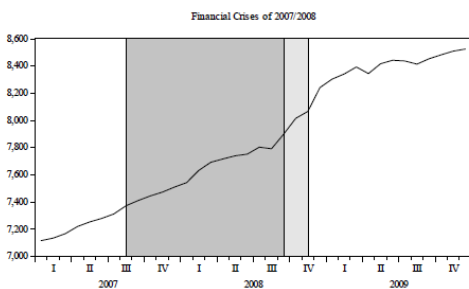
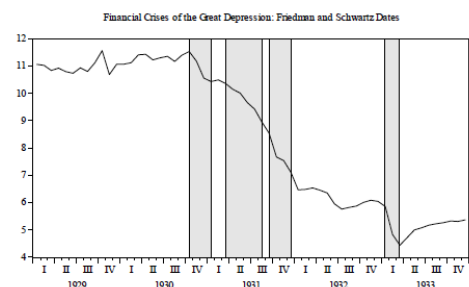
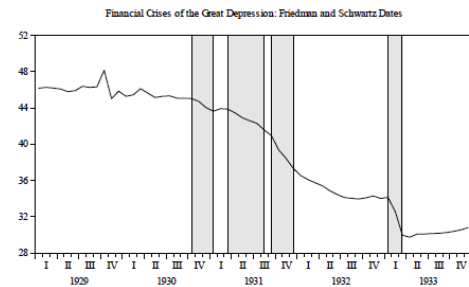


Figure 1. Money Stock (M2)

Figure 2. Ratio of Deposits to Currency

Source: Bordo and Landon-Lane (2010)

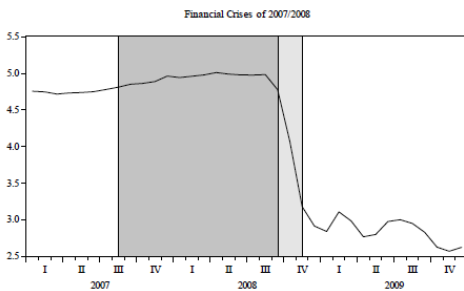
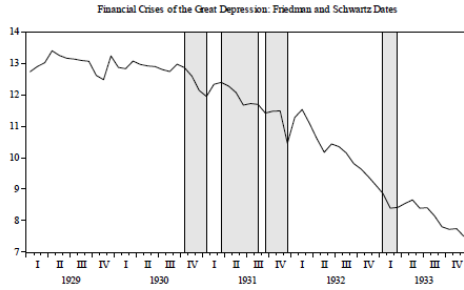


Figure 3. Ratio of Deposits to Reserves

Source: Bordo and Landon-Lane (2010)

in Circulation

Source: Bordo and Landon-Lane (2010)

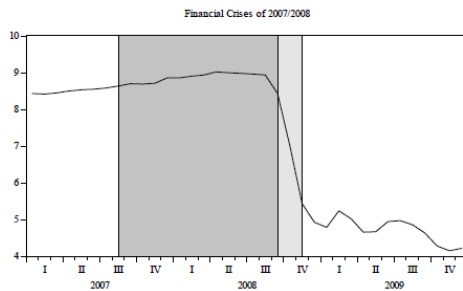
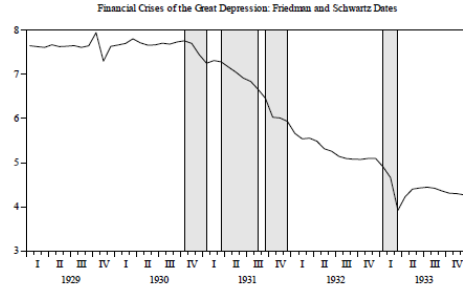


Figure 4. Ratio of M2 to Monetary Base

Source: Bordo and Landon-Lane (2010)

Thus the recent financial crisis and recession was not a pure Friedman-and-Schwartz money story. It was not driven by an old-fashioned contagious banking panic. But as in 1930-1933, there was a financial crisis. It reflected a run beginning in August 2007 on the institutions that make up the shadow banking system, which was not regulated by the central bank nor covered by the financial safety net. These institutions held much lower capital ratios than the traditional commercial banks and hence were considerably more prone to risk. When the crisis hit they were forced to engage in major deleveraging involving a fire sale of assets into a falling market, which in turn lowered the value of their assets and those of other financial institutions. A similar negative feedback loop occurred during the Great Contraction, according to Friedman and Schwartz (Bordo and Landon-Lane 2013c).

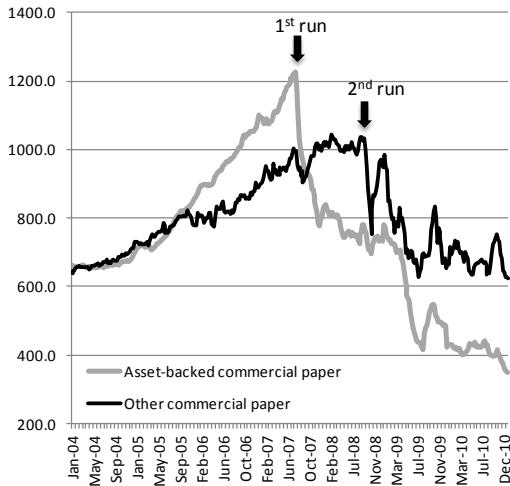


Figure 5. Commercial paper (billions of dollars)

Source: Federal Reserve Bank of St. Louis

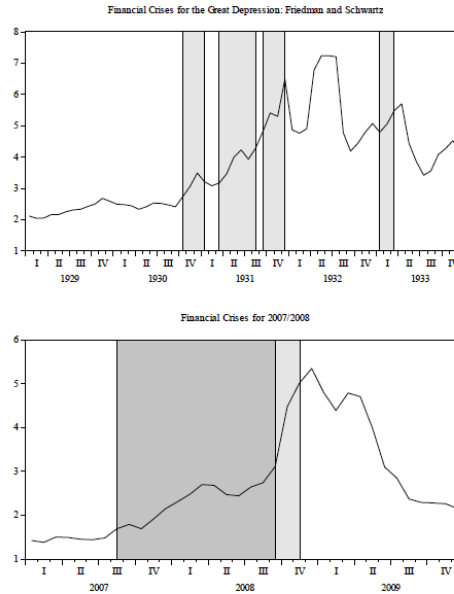


Figure 6. Quality Spread (Baa – 10 year T-Bill)

Source: Bordo and Landon-Lane (2010)

According to Gorton (2010), the crisis centered in the repo market (sale and repurchase agreements) which had been collateralized by opaque (subprime) mortgage-backed securities by which investment banks and some universal banks had been funded. The repo crisis continued through 2008 and then morphed into an investment bank crisis after the failure of Lehman Brothers in September 2008. It peaked with the collapse of the money market mutual funds after the Reserve Primary Fund “broke the buck” and liquidity for the commercial paper market dried up (Blinder 2013, chapter 6) (see figure 5). The crisis led to a credit crunch which led to a serious (but, compared to the Great Contraction, not that serious) recession. See figure 6 which compares the Baa-ten year composite Treasury spread between the two historical episodes. This spread is often used as a measure of credit market turmoil (Bordo and Haubrich 2010). As can be seen, the spike in the spread in 2008 is not very different from that observed in the early 1930s.

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Unlike the liquidity panics of the Great Contraction, the deepest problem facing the financial system was insolvency. This was only recognized by the Fed after the September 2008 crisis. The problem stemmed from the difficulty of pricing securities backed by a pool of assets, whether mortgage loans, commercial paper issues, or credit card receivables. Pricing securities based on a pool of assets is difficult because the quality of individual components of the pool varies. Unless each component is individually examined and evaluated, no accurate price of the security can be determined.

As a result, the credit market was confronted by financial firms whose portfolios were filled with securities of uncertain value: derivatives that were so complex the art of pricing them had not been mastered. The credit market thus was plagued by the inability to determine which firms were solvent and which were not. Lenders were unwilling to extend loans when they couldn't be sure that a borrower was creditworthy (Schwartz 2008).

Taylor (2009) buttresses the critique of the Fed's liquidity policy. He shows that the sharp reduction in the federal funds rate from 5.25 percent to 2 percent between August 2007 and April 2008 was significantly below what the Taylor Rule predicted. This overly expansionary monetary policy led to a sharp depreciation in the dollar and a run-up in commodity prices in 2008. In addition, Taylor and Williams (2009) provide evidence that the TAF had little impact in reducing the OIS three-month Libor spread—a measure of risk and liquidity effects. This suggests that the spread largely reflected counterparty risk.

Thus an important shortcoming of the Fed's reading of the history of the Great Contraction was initially to treat the recent crisis as primarily a liquidity crisis. The key problem of the crisis of 2007-2008 was not liquidity but insolvency—especially the fear of insolvency of counterparties.

Another hallmark of the recent crisis which was not present in the Great Contraction was that the Fed and other US monetary authorities engaged in a series of bailouts of incipient and insolvent firms deemed too systematically connected to fail. These included Bear Stearns in March 2008, the GSEs in July, and AIG in September. Lehman Brothers had been allowed to fail in September 2008 on the grounds that it was insolvent, that it was not as systematically important as the others, and—as was stated well after the event—that the Fed did not have the legal authority to bail it out.

Finally, a comparison could be made between the 1930s experience and the recent crisis in the use of the LSAPs to attenuate the recession. In the spring of 1932, under pressure from the Congress, the Fed began conducting large -scale open market operations. Unlike the recent experience, the economy had not yet reached the zero lower bound and short-term rates were about 2 percent. In its open market purchases, the Fed did not restrict its purchases to short-term securities but bought government securities at all maturities up to ten years. According to Friedman and Schwartz⁵ (1963a) and Meltzer (2003), the policy, although unfortunately short-lived, did succeed in turning around the economy. M2 stopped declining and flattened out; and the monetary base and Federal Reserve credit picked up, as did bank credit (see figure 7). Also, industrial production and real GDP

⁵ Landon-Lane (2013) examined the counterfactual effect of a policy like the LSAPs in the period after 1934 when short-term interest rates had reached the zero lower bound. He showed that had the Fed not followed its inactive policy but instead conducted bond purchases of comparable magnitude to those done between 2008 and 2012 it would have lowered long-term bond yields by similar magnitudes—about 20 basis points—as the recent Fed policy. This policy would have likely accelerated the Treasury-driven recovery.

began expanding after a lag. Interest rates reversed their rise and dropped like a stone. Unlike the recent LSAPs, the bond purchases were not locked up in the banks' excess reserves. The Fed did not pay interest on reserves.

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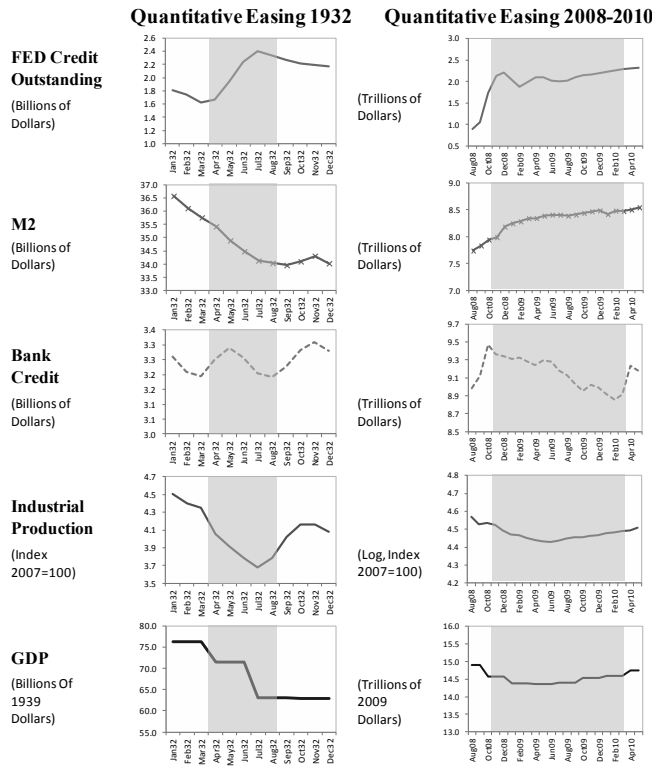


Figure 7. FED Credit Outstanding, M2, Bank Credit, IP and GDP; 1932 and 2008-2010

Source: Federal Reserve Bank of St. Louis

By comparison, the recent LSAPs did not significantly increase the M2 money supply or bank credit and most were locked up in bank reserves by the spread of a bit less than 25 basis points between the interest on excess reserves and the federal funds rate. As a consequence, neither M2 nor bank lending increased much and long-term Treasury yields fell less than their counterparts in the 1930s, although the sizes of the purchases were much greater (see figure 8).

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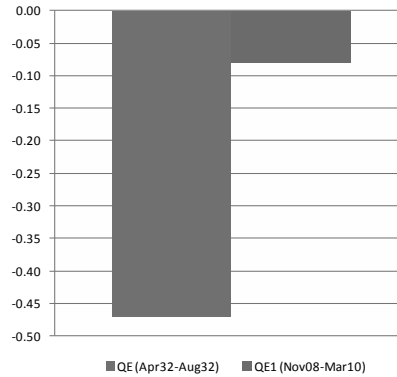


Figure 8. Changes in the ten-year Treasury bond yield

(in percentage points, difference between the interest rate during the last month of the program and the month previous to the program beginning)

Source: Federal Reserve Bank of St. Louis

There are many differences between the two cases, but the comparison still seems relevant. The Fed through its LSAP policy—by locking up reserves in the banking system—tied at least one hand behind its back and prevented a monetary expansion which could have stimulated a faster recovery than did occur.

Conclusion: some policy lessons from history

(1) Overly expansive liquidity policy

From the banking panics of the 1930s, the Federal Reserve learned the Friedman and Schwartz lesson of the importance of conducting an expansionary open-market policy to meet all the demands for liquidity (Bernanke 2012a). In the recent crisis, the Fed conducted highly expansionary monetary policy in the fall of 2007 and from late 2008 to the present. Taylor (2009) has argued that Fed liquidity policy was too expansionary in the fall of 2007 and early 2008. This reduced the exchange value of the dollar and helped stimulate a commodity price boom.

However, according to Hetzel (2012), Fed monetary policy was actually too tight through much of 2008 as seen in a flattening of money growth and the monetary base and high real interest rates. Although the Fed's balance sheet surged, the effects on high-powered money were sterilized. These actions may have reflected concern that rising commodity prices at the time would spark inflationary expectations. By the end of the third quarter of 2008 the sterilization ceased, evident in a doubling of the monetary base.

(2) Credit policy

The Fed, based on Bernanke's (1983) analysis that the 1930s banking collapse led to a failure of the credit allocation mechanism, adopted credit policy—providing credit directly to markets and firms the Fed deemed most in need of liquidity—in contrast to delivering liquidity directly to the market by open market purchases of Treasury

securities and leaving the distribution of liquidity to individual firms to the market. The choice of targeted lending instead of an imperial liquidity provision by the market exposed the Fed to the temptation to politicize its selection of recipients of its credit (Schwartz 2009). In addition the Fed's balance sheet ballooned in 2008 and 2009 with the collateral of risky assets including those of nonbanks. These assets were in part backed by the Treasury. The Fed also worked closely with the Treasury in the fall of 2008 to stabilize the major banks with capital purchases and stress testing. Moreover, the purchase of mortgage-backed securities combined monetary with fiscal policy. Many of these actions referred to by Goodfriend (2011) as credit policy have impinged upon the Fed's independence and have weakened its credibility.

(3) Bailouts

Undoubtedly the most serious policy error that occurred in the crisis of 2007-2008 was the bailouts that the Fed and other US monetary authorities engaged in of incipient insolvent firms deemed too systematically connected to fail. These included Bear Stearns in March 2008, the GSEs in July, and AIG in September. The investment bank Lehman Brothers had been allowed to fail in September on the grounds that it was basically insolvent and not as systemically important as the others. One wonders: if Bear Stearns had been allowed to fail, could the severe crisis in September/October 2008 have been avoided? Had Bear Stearns been closed and liquidated, it is unlikely that more demand for Fed credit would have come forward than what actually occurred. The fact that general creditors and derivative counterparties of Bear Stearns were fully protected by the merger of the firm with JPMorgan Chase had greater spillover effects on the financial services industry than would have been the case had a receiver been appointed who would have frozen old accounts and payments as of the date of the appointment. Fewer public funds would have been subjected to risk. When Drexel Burnham Lambert was shut down in 1990, there were no spillover effects.

Furthermore, assume, as the Fed argued at the time, that there would have been a crisis in March like the one that followed Lehman's failure in September. Would it have been as bad as the latter event? Assume that the moral hazard implications of bailing out Bear Stearns led the remaining investment banks and other market players to follow riskier strategies than otherwise on the assumption that they also would be bailed out. This surely made the financial system more fragile than otherwise, so that when the monetary authorities decided to let Lehman fail the shock that ensued and the damage to confidence were much worse (Bordo 2008).

In addition, in response to Bernanke's (2012a) claim that legally the Fed could do nothing to save Lehman, the history of financial crises provides examples when monetary authorities bent the rules and rescued "insolvent banks" whose failure would have otherwise led to a panic. The chairman's statement that the Fed was legally prevented

from rescuing Lehman reads like an *ex post hoc ergo propter hoc* justification to cover the Fed's tracks from what turned out to be a disastrous decision.

(4) Quantitative Easing

Finally, the quantitative easing policy that was followed since late 2008 was deliberately hampered by the Fed's decision not to reduce the spread between the interest on excess reserves and the federal funds rate to zero. It was based on a fallacious argument that reducing the spread would destroy the money market mutual fund industry. This policy discouraged the banks from lending (Blinder 2013; Hall 2013; Woodford 2012). The successive LSAP policies involved discretion and were not based on rule-like behavior (Taylor 2009).

The forward guidance policy which accompanied quantitative easing has also not been rule-like. Rather than stick to its announced conditions for tapering its bond purchases and its eventual exit from the LSAP policy, the Fed has based its policy on very short-run considerations.

In addition, keeping interest rates low for many years has created growing distortions in the economy. These include: financial repression, as in the 1940s, imposing a burden on savers; the discouraging of savings; potential capital losses to banks when the Fed finally exits; losses on the Fed's balance sheet as rates rise; reduced transfers to the Treasury; and policy uncertainty which threatens bank lending and investment.

In conclusion, the crisis of 2007-2008 had similarities to the 1930s Great Contraction in that there was a panic in the shadow banking system. But it was not a contagious banking panic that required massive infusions of liquidity as in the 1930s. It was largely a solvency crisis based especially on fear of the insolvencies of counterparties. The Fed was slow to recognize this and injected too much liquidity into the economy in 2007. When it did recognize the problem in 2008 it instituted credit policies which have threatened its independence. It also engaged in massive bailouts of large, interconnected financial institutions which were deemed too essential to fail. This engendered moral hazard for future bailouts. Despite these issues, the Fed avoided the fate of the Great Depression.

Finally, when short-term interest rates hit the zero lower bound the Fed began following quantitative easing policies. Once the recession ended these policies were continued to speed up an unusually slow recovery. The attempt at stimulus once the economy returned to positive growth did not add much traction. It also has had perverse and potentially negative long-lasting effects on the real economy and on future growth. QE as well as the credit policies followed during the crisis have been based on discretion and not the rule-like approach to monetary policy followed during the Great Moderation. These actions have damaged the Fed's hard-earned credibility. It will take a long time to regain it.

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