



Central banking in the credit turmoil: An assessment of Federal Reserve practice[☆]

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ABSTRACT

Central banking is understood in terms of the fiscal features of monetary, credit, and interest on reserves policies. Monetary policy – expanding reserves by buying Treasuries – transfers all revenue from money creation directly to the fiscal authorities. Credit policy – selling Treasuries to fund loans or acquire non-Treasury securities – is debt-financed fiscal policy. Interest on reserves frees monetary policy to fund credit policy independently of interest rate policy. An ambiguous boundary of responsibilities between the Fed and the fiscal authorities contributed to economic collapse in fall 2008. “Accord” principles are proposed to clarify Fed credit policy powers and secure its independence on monetary and interest rate policy. The Fed needs more surplus capital from the fiscal authorities to be fully flexible against both inflation and deflation at the zero interest bound.

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1. Introduction

The credit market turmoil that began in August 2007 and precipitated the Great Recession challenged central banks around the world as never before. Central banks increased aggregate bank reserves enormously, and lowered targeted short-term interest rates to zero in many countries. For instance, the Federal Reserve grew bank reserve balances from around 10 billion dollars in early September 2008 to over 1 trillion dollars as it drove the federal funds rate nearly to zero.

Central bank lending expanded to facilitate private credit flows. For instance, Federal Reserve loans to depository institutions stood at over 400 billion dollars at the end of April 2009. Previously, the most expansive, prolonged Fed lending was a loan of roughly 5 billion dollars to Continental Illinois Bank from May 1984 until February 1985.¹ The Fed extended its credit reach well beyond depository institutions. By April 2009, the Fed had purchased around 350 billion dollars of mortgage-backed securities guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae; and the Fed had extended around 200 billion dollars of loans to a special purpose vehicle created to purchase commercial paper.²

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¹ For a brief period following 9/11 Fed lending to banks rose above 30 billion dollars. Fed lending discussed throughout the text refers to overnight loans.

² Federal Reserve Statistical Release H.4.1 “Factors Affecting Reserve Balances.”

Still farther afield, the Fed extended credit to three limited liability companies in conjunction with efforts to stabilize institutions that it deemed to be critically important. In mid-March 2008 the Fed agreed to extend roughly 29 billion dollars to Maiden Lane I so that it could acquire a variety of mortgage obligations, derivatives, and hedging products to facilitate the acquisition of Bear Stearns by JP Morgan Chase. Maiden Lane II and III were both created to restructure the Fed's lending to AIG in the aftermath of its financial support for AIG in September 2008. Together, the Fed lent Maiden Lane II and III roughly 50 billion dollars to purchase, respectively, residential mortgage-backed securities from AIG, and multi-sector collateralized debt obligations on which AIG wrote credit default swap contracts.³

All together, the Fed grew its balance sheet from around 900 billion dollars in mid-2007 to over 2 trillion dollars as of April 2009. The Fed did so while reducing its purchases of US Treasury securities from around 800 to 550 billion dollars. The Fed funded its enormous increase in lending with around 250 billion dollars from the sale of Treasury securities, around 300 billion dollars of additional deposits provided by the Treasury, and the creation of around 800 billion dollars of bank reserves for a grand total of around 1.3 trillion dollars of Fed lending as of April 2009. Since then, the Fed mainly shifted the composition of its assets—shrinking its lending to depositories and through various special facilities, rebuilding its holdings of Treasuries to around 800 billion dollars, increasing its holdings of mortgage backed securities to around 1 trillion dollars, and acquiring about 170 billion dollars of federal agency debt securities.⁴

The Fed and other central banks around the world have undergone a “stress test” that is still very much in progress. Yet enough time has passed to take stock, not so much to evaluate the timing, magnitude, and effectiveness of particular actions, but to observe how central banks put their various powers to work, and to use the observations to rethink central banking more generally.

This essay presents a framework for thinking about central banking in light of these extraordinary developments. The reconsideration begins by classifying core central banking initiatives as monetary policy, credit policy, or interest on reserves policy. Briefly, monetary policy refers to open market operations that expand or contract high-powered money (bank reserves and currency) by buying or selling Treasury securities. Credit policy shifts the composition of central bank assets, holding their total fixed. Interest on reserves policy involves adjusting interest paid on bank reserves.

The three-fold classification did not matter much for the Fed in the past. Until the recent credit turmoil Fed credit policy played a relatively minor role. The Fed could not pay interest on reserves. And monetary policy was utilized to target the federal funds rate. However, the classification is essential to understand the extraordinary central banking initiatives in the current context.

The heart of the paper is the idea that monetary, credit, and interest on reserves initiatives all involve fiscal policy in important but different ways, and that it is essential to understand each initiative in terms of its fiscal features. Fiscal policy involves the use of public funds acquired with current taxes or by borrowing against future taxes. For the purpose of this paper, fiscal policy should be understood to include the lending of public funds to particular borrowers financed by selling Treasury securities against future taxes.

From a fiscal policy perspective, monetary policy saves the government interest that it would pay otherwise on outstanding Treasuries. Mechanically, the interest saving is achieved because the central bank returns to the Treasury after expenses all the interest it receives on the Treasuries it acquires in the conduct of monetary policy. Thus, expansionary monetary policy provides the fiscal authorities with a flow of additional revenue. In particular, all the revenue from monetary policy is transferred via the acquisition of Treasuries to the fiscal authorities to allocate as they see fit.

Credit policy is not monetary policy because it does not alter the stock of bank reserves or currency outstanding. Credit policy involves lending to particular borrowers or acquiring non-Treasury securities with proceeds from the sale of Treasuries. The fiscal authorities then receive interest on the credit assets instead of interest on the Treasuries held by the central bank. In effect, credit policy commits future taxes to back loans or non-Treasury security purchases via the sale of Treasuries. Thus, credit policy involves the fiscal allocation of public funds in a way that monetary policy does not.

Interest on bank reserves is not monetary or credit policy since it involves neither the size nor the composition of the central bank balance sheet. Interest on reserves uses public funds to pay interest on bank reserve balances at the central bank; therefore interest on reserves also involves the allocation of public funds in a way that monetary policy does not.

These and other fiscal features of monetary, credit, and interest on reserves policies are employed below to identify and evaluate the role that each type of initiative plays in central bank stabilization policy.

The paper also considers questions of central bank independence. Flexibility and decisiveness are essential for effective central banking. Independence is essential to enable a central bank to react promptly to macroeconomic or financial shocks without the approval of the Treasury or the legislature. Central bank initiatives must be regarded as legitimate by the fiscal authorities and the public. The problem is to identify the limits of independence on monetary, credit, and interest on reserves policies to preserve a workable, sustainable division of responsibilities between the central bank and the fiscal authorities.

Monetary policy can be conducted independently by a central bank because the objectives of monetary policy – price stability and full employment – are reasonably clear and coherent, and confining purchases to Treasuries transfers all the revenue from money creation directly to the fiscal authorities.

³ Board of Governors of the Federal Reserve System (2009b), February, appendix.

⁴ Board of Governors of the Federal Reserve System (2009a), starting in June 2009.

Neither condition is satisfied for central bank credit policy. Objectives that guide and circumscribe central bank credit policy have not been clear, and credit policy inherently involves the fiscal allocation of public funds. Prior to the passage of the Dodd-Frank financial reform legislation of 2010, Alan Greenspan wrote that in 1991

“at the urging of the Federal Reserve Board of Governors, Section 13-3 of the Federal Reserve Act was considered, and amended, by Congress. The section grant[ed] virtually unlimited authority to the Board to lend in “unusual and exigent circumstances””.⁵

Given the inherent fiscal nature of credit policy, it is not surprising that expansive Fed credit policy in the recent turmoil created conflict with the Congress. In light of that experience, the Dodd-Frank law limits the Fed’s power to lend, requiring Fed lending extended beyond depository institutions to be approved by the Treasury Secretary and to be part of a broad program not directed to any particular borrower.

This paper develops a set of principles as the basis for a Treasury-Fed “accord” to clarify and limit the Fed’s credit policy powers and preserve its independence on monetary and interest on reserves policy. Sections 4.2 and 4.3 below suggest that ambiguity in the responsibility for the provision of fiscal support for the financial system contributed to panic and economic collapse in fall 2008. Among other things, the “Accord” principles are motivated by the realization that an independent central bank cannot be relied upon to deliver or decide upon the delivery of fiscal support for the financial system.

The essay proceeds as follows. Section 2 classifies central banking initiatives into monetary policy, credit policy, and interest on reserves policy. Section 3 explains how monetary, credit, and interest on reserves policies work in terms of their fiscal features. Section 4 assesses five actual Federal Reserve initiatives in the credit turmoil—the Term Auction Facility, Fed lending to facilitate the acquisition of Bear Stearns by JP Morgan Chase, Fed support for AIG, emergency authority to pay interest on reserves, and the joint statement by the Treasury and the Fed on the role of the Fed in preserving financial and monetary stability. Section 5 develops and presents the “accord” principles for clarifying the boundary of central bank credit policy. Section 6 considers monetary and fiscal proposals to strengthen policy flexibility at the zero interest bound and in the exit strategy—use by the central bank of non-monetary managed liabilities, and enlarged surplus capital on the central bank balance sheet. Section 7 is a brief conclusion.

2. Monetary policy, credit policy, and interest on reserves policy

Monetary policy consists of open market operations that expand or contract high-powered money (bank reserves plus currency) by buying or selling Treasury securities. Until the recent credit turmoil, the Fed satisfied virtually all of its asset acquisition needs in support of monetary policy by purchasing Treasury securities, an acquisition policy known as “Treasuries only”.⁶ This was done to avoid carrying credit risk on the Fed’s balance sheet.

Pure monetary policy works by varying the aggregate quantity of bank reserves to influence the spread between the federal funds rate and interest paid on reserves. For example, an open market purchase of Treasury securities that adds reserves to the banking system lowers the federal funds rate relative to whatever rate the Fed pays on reserves which until October 2008 was always zero. The Fed utilized monetary policy exclusively in the past to manage the federal funds rate in the pursuit of interest rate policy directed by the Federal Open Market Committee. At the start of the credit turmoil in the summer of 2007, the Fed had accumulated on its balance sheet roughly 850 billion dollars of Treasury securities obtained in the course of supplying the economy with currency and bank reserves.

Credit policy involves changing the composition of the central bank’s asset portfolio between Treasury securities, on one hand, and credit to the private sector or to non-Treasury government entities on the other hand, holding high-powered money fixed. For instance, the hundreds of billions of dollars of TAF discount window credit auctioned by the Fed to depositories from the fall of 2007 through the summer of 2008 was credit policy financed by selling Treasuries from the Fed’s portfolio.

A **combination credit and monetary policy** initiative could involve the funding of central bank lending to depositories or the purchase of non-Treasury securities with newly created bank reserves. The trillion dollars of bank reserves that currently finances a like volume of mortgage-backed securities and federal agency debt on the Fed balance sheet reflects a combination credit and monetary policy. Importantly, even though most MBS and agency securities held by the Fed are liabilities of Fannie Mae and Freddie Mac, and the two agencies were placed into government conservatorship in September 2008, these securities are not the equivalent of US Treasuries. They do carry a very strong guarantee by the US Treasury. But the Treasury’s “credit enhancement” is not the same as the legally binding “full faith and credit” obligation of the US government that backs Treasury securities.⁷ Only Congress can confer “full faith and credit” backing. Ginnie Mae MBS have such backing, but Fannie and Freddie liabilities do not.

Interest on reserves policy consists of varying interest that a central bank pays on bank reserves, holding monetary policy and credit policy fixed. As explained in Section 3 below, the spread (possibly zero) between the federal funds rate and interest paid on reserves is pinned down by the aggregate quantity of bank reserves provided by the central bank. Hence, holding monetary policy fixed, an adjustment in interest paid on reserves tends to be passed directly to the federal

⁵ Greenspan (2010), p. 17).

⁶ Most Treasuries have been purchased outright with a fraction held under repurchase agreements for liquidity purposes.

⁷ Goldfarb (2010).

funds rate. Thus, a central bank can pursue interest rate policy without employing monetary policy by varying interest on reserves alone.

Soon after the Fed began to pay interest on reserves in October 2008 it cut interest rates nearly to zero and interest on reserves has not mattered much since. As discussed in Section 4.4 below, however, interest on reserves will help the Fed exit the zero interest bound, if need be, without first shrinking its balance sheet. Even if an abundance of aggregate bank reserves continues to put downward pressure on the federal funds rate, depository institutions will not lend in the interbank market at interest below the rate they can earn on reserve balances held at the Fed. Hence, the Fed will be able to elevate market interest rates over time by paying ever-higher interest on reserves, regardless of the size of its balance sheet.

3. Fiscal aspects of monetary, credit, and interest on reserves policies

Monetary policy involves fiscal policy in two ways. First, monetary policy governs the tax rate on bank reserves. The tax rate on reserves is the wedge between the overnight interbank interest rate, i.e., the federal funds rate, and interest paid on reserve balances held overnight at the central bank. Monetary policy varies the *scarcity* of reserves in the banking system in order to influence the marginal liquidity services yield on reserves. For instance, draining reserves to increase their scarcity raises the marginal liquidity services yield. A higher liquidity services yield, in turn, requires a higher interest opportunity cost of holding reserves overnight at the central bank in equilibrium, and hence a higher spread between the federal funds rate and interest paid on reserves. To sum up, monetary policy may be understood to manage the federal funds rate (the market interest rate) given interest paid on reserves at zero or otherwise, by varying the scarcity and thereby the tax rate on reserves.

Second, as pointed out above, a “Treasury only” asset acquisition policy leaves the decisions regarding the use of the revenue from the creation of high-powered money to the fiscal authorities. For example, in 2006 the Fed transferred around 30 billion dollars to the Treasury when the Fed portfolio was nearly all Treasuries, the Fed did not pay interest on reserves, and the federal funds rate averaged around 6 percent. Given the huge volume of Treasury debt outstanding and likely to remain outstanding, the Fed could satisfy all its asset acquisition needs independently with “Treasuries only” for the foreseeable future if it wished to do so.

Credit policy has no effect on the federal funds rate because it does not change aggregate bank reserves or interest paid on reserves. As pointed out above, the correct way to think of central bank credit policy is as debt-financed fiscal policy. At the margin, the central bank returns to the Treasury the interest earned on Treasury securities that it holds; so when the central bank sells Treasuries to finance loans or to purchase mortgage-backed securities, the result is just as if the Treasury financed the loans or purchases by borrowing from the public.

Central bank credit policy works by interposing the government between private borrowers and lenders and exploiting the government’s creditworthiness – the power to borrow credibly against future taxes – to facilitate flows to distressed or favored borrowers. Doing so involves a fiscal policy decision to put taxpayer funds at risk. In contrast to holding Treasuries, or those securities with “full faith and credit” backing, all central bank lending carries some credit risk and exposes the central bank, and ultimately taxpayers, to losses and controversial disputes regarding credit allocation.

Even central bank lending that is collateralized fully exposes taxpayers to losses if the borrower fails subsequently. For instance, emergency central bank lending that finances the withdrawal of uninsured claimants of a financial institution that fails subsequently strips that institution of collateral that would be available otherwise to cover the cost of insured deposits or other government guarantees. Even if the central bank lends only against good collateral so as not to take appreciable credit risk itself, lending to depositories and emergency credit extended to other financial institutions that have federal guarantees has the capacity to impose significant losses on taxpayers.

Interest on reserves policy enables a central bank to employ a fiscal policy instrument – interest on reserves – to implement interest rate policy without imposing a tax in the form of below market interest on bank reserves.⁸ To do so, interest on reserves is set at the intended interest rate target and the central bank creates an abundance of bank reserves sufficient to drive the interbank interest rate down to the interest on reserves floor. In effect, this operating procedure attains Milton Friedman’s “optimum quantity of money” with respect to bank reserves, although not with respect to currency unless interest rates are zero.⁹

Implementing interest rate policy by employing interest on reserves together with satiation of the reserves market could yield a number of practical benefits. An abundance of costless, safe reserves could displace costly and risky private credit in the payments system and enable the central bank to limit its own credit in support of the payments system. Eliminating the tax on reserves could raise deposit rates, lower loan rates, and thereby reduce banking costs for the public. Eliminating the reserve tax secures the central bank’s control of short-term interest rates, since banks would no longer have an incentive to substitute away from central bank reserves in the provision of transactions services. Finally, implementing interest rate policy at the interest on reserves floor frees monetary policy to fund credit policy independently of interest rate policy. As discussed in Section 4.4 below, it was for this reason that the Fed asked Congress in May 2008 to expedite its authority to pay interest on reserves.

⁸ Goodfriend (2002) and Keister et al. (2008) discuss the use of interest on reserves to implement interest rate policy.

⁹ Friedman (1969).

The revenue from monetary policy would likely increase on average over time by paying interest on reserves at the market interbank rate. There would be a small loss of revenue to the fiscal authorities associated with interest paid to banks on preexisting reserve balances. However, the expansion of reserves could finance the acquisition of long-term Treasuries by the central bank whose yields exhibit a positive term premium relative to short-term interest rates.¹⁰ The “interest rate risk” incurred would be manageable if central bank liabilities continued to consist overwhelmingly of non-interest bearing currency.

4. Fiscal aspects of five Federal Reserve initiatives

This section describes five Fed initiatives in the credit turmoil: the Term Auction Facility, Fed lending to facilitate the acquisition of Bear Stearns by JP Morgan Chase, Fed support for AIG, emergency authority to pay interest on reserves, and the joint statement by the Treasury and the Fed on the role of the Fed in preserving financial and monetary stability. The descriptions highlight the role that fiscal policy plays in each of these initiatives, and how at times the fiscal aspects of these initiatives created problems for the Fed and for the effectiveness of its interventions to stabilize the economy.

4.1. The term auction facility

In December 2007, the Fed approved the establishment of the Term Auction Facility (TAF) under which it auctioned term loans against a wide variety of collateral to depository institutions judged to be in sound condition.¹¹ After January 2009 the minimum bid rate was interest paid on reserves. TAF loans were provided for 28- and 84-day terms. Roughly 400 billion dollars of TAF loans were outstanding in April 2009. The TAF program was established as a pure credit policy in as much as the Fed financed TAF loans with funds acquired by selling Treasury securities from its portfolio, with no effect on aggregate bank reserves.

The TAF worked as follows. The credit turmoil was marked by an unprecedented elevation in rates at which banks could borrow in the interbank market. For example, the elevation was especially pronounced in the spread between 3-month LIBOR and the expected 3-month path for federal funds rate target. Banks recognized a substantial credit risk in lending to each other given that interbank lending is generally unsecured. Even if collateral were taken, the ability to liquidate it at a reasonable price could be impaired severely in a widespread default. Banks reacted by shortening the maturity at which they were willing to lend, and charging a substantial term premium for interbank lending at longer horizons such as one and three months. Bank positions in the interbank market can be highly persistent. For instance, big banks tend to be borrowers and smaller banks lenders. When the credit turmoil hit, those banks that were persistent borrowers endured a sharp persistent jump in their funding costs.

Persistent borrowers at term LIBOR, for instance, would bid most aggressively for TAF term credit. By substituting TAF credit for more expensive term funding they could lower their borrowing costs. Persistent lenders of funds in the interbank market could sell their excess reserves to the Fed in exchange for Treasury securities sold by the Fed to fund its TAF loans.

Since the TAF program had no effect on total bank reserves, and little if any effect on the balance of supply and demand in the federal funds market, and little effect on the creditworthiness of borrowing banks, it should not have been expected to have much sustained effect on the marginal rate paid by persistent interbank borrowers. The Fed says that the TAF program was designed to increase the access of depository institutions to funding in order to support the ability of such institutions to meet the credit needs of their customers.¹² Whether or not the TAF program had much effect on the marginal interbank rate, the TAF program can be understood to have reduced funding costs of those banks caught with a persistent funding shortfall. Understood this way, the TAF program provided infra-marginal relief on funding costs for persistent interbank borrowers.

The TAF provided credit relief at little cost to the Fed—the rate earned on TAF credit exceeded interest on the Treasury securities sold to fund it, and TAF credit was fully collateralized. However, it cannot be said that the TAF provided interest savings to banks at little *risk to the taxpayer*. As discussed in Section 2 above, even Fed lending that is collateralized fully exposes the deposit insurance fund, and ultimately taxpayers to losses if the borrower fails subsequently. If TAF credit financed the exit of uninsured or unsecured lenders to a bank that failed with TAF loans outstanding, then the TAF would have stripped the bank of collateral that would have been available otherwise to cover the cost of insured deposits or other government guarantees.

4.2. Fed lending to facilitate the acquisition of Bear Stearns by JP Morgan Chase

In mid-March 2008 Bear Stearns was pushed to the brink of failure after losing the confidence of investors and its access to short-term funding. The Fed judged that a disorderly failure of Bear Stearns would have threatened overall financial stability. After talking with the Treasury and SEC, the Fed determined that it would invoke emergency authority to provide special financing to facilitate the acquisition of Bear Stearns by JP Morgan Chase.¹³ In June, when the acquisition was

¹⁰ Campbell et al. (1997), p. 415, report an average 10-year term premium of around 1.4 percent per annum relative to the short rate.

¹¹ Armantier et al. (2008).

¹² Board of Governors of the Federal Reserve System (2009b), February, p. 47.

¹³ Geithner (2008).

completed, the Fed extended roughly 29 billion dollars to the limited liability company Maiden Lane I, which was formed to facilitate the transaction by acquiring a variety of mortgage obligations, derivatives, and hedging products from Bear Stearns.

This is not to question the Fed's decision to provide financial support for the acquisition of Bear Stearns by JP Morgan Chase. The point is that the Fed's financial support went well beyond ordinary lending to depository institutions. Institutions ordinarily eligible to borrow at the Fed discount window are depositories that hold balances at the Fed. Investment banks were not in this group. Hence, the Fed had to invoke emergency powers to lend in support of the acquisition.

The Fed usually provides loans against good collateral to depositories deemed to be in sound financial condition. The Fed went beyond these three conditions in this case. First, it lent to a limited liability company Maiden Lane I. Second, it lent against assets of questionable value. Third, its loan amounted to a purchase. Maiden Lane I was funded by a 29 billion dollar loan from the Fed and a 1 billion dollar loan from JP Morgan Chase. The first 1 billion dollar loss was to be borne by JPMC any further loss up to 29 billion was to be borne by the Fed. And any realized gains beyond the 30 billion initial financing, which could occur because of revaluing the underlying assets, would accrue to the Fed. This arrangement meant that by lending to Maiden Lane I, the Fed had all of the upside of the asset valuations and all but a small fraction of the downside. In effect, the Fed "purchased" the assets, again, a variety of risky mortgage obligations, derivatives, and hedging products acquired from Bear Stearns.¹⁴

The Fed financed its loan to Maiden Lane I with funds from the sale of Treasury securities. Hence, the loan to Maiden Lane I was pure credit policy, which amounted to a debt-financed fiscal policy purchase of a pool of risky private financial assets. The Fed effectively acknowledged this in two ways. The Fed brought Maiden Lane onto its balance sheet and recognized implicitly that its *loan* to Maiden Lane amounted to a *purchase* of the assets in Maiden Lane.¹⁵ And the Fed received a letter from the Treasury saying "if any loss arises out of the special facility extended by the FRBNY to JPMC, the loss will be treated by the FRBNY as an expense that may reduce the net earnings transferred by the FRBNY to the Treasury general fund".¹⁶

In April 2008, Paul Volcker described the Fed's lending to facilitate the acquisition of Bear Stearns by JP Morgan Chase as follows:

"Simply stated, the bright new financial system—for all its talented participants, for all its rich rewards—has failed the test of the market place. To meet the challenge, the Federal Reserve judged it necessary to take actions that extend to the very edge of its lawful and implied powers, transcending certain long embedded central banking principles and practices. The extension of lending directly to non-banking financial institutions – while under the authority of nominally "temporary" emergency powers – will surely be interpreted as an implied promise of similar actions in times of future turmoil. What appears to be in substance a direct transfer of mortgage and mortgage-backed securities of questionable pedigree from an investment bank to the Federal Reserve seems to test the time honored central bank mantra in time of crisis – "lend freely at high rates against good collateral" – to the point of no return."¹⁷

In retrospect, Volcker's remarks can be seen as a kind of "life preserver" thrown to the Fed.¹⁸ Without judging whether the Fed's actions were called for under the circumstances, but describing the Fed as having acted at the "very edge of its lawful and implied powers," Volcker's public comments could have prompted the Fed and the Treasury during the period of relative calm in April 2008 to urge Congress to appropriate resources to stabilize the financial system, should those resources be needed as the credit turmoil ran its course. Instead, Congress was not then so involved, and the Fed remained exposed to having its balance sheet utilized as an "off budget" arm of fiscal policy.

4.3. Federal Reserve support for AIG

Allowing the Fed to be the front line of fiscal support for the financial system proved to be a problem in the fall of 2008. On September 7 the Treasury and the Federal Housing Finance Agency announced they would place Fannie Mae and Freddie Mac into conservatorship.¹⁹ Shortly thereafter, Lehman Brothers came under pressure as short-term secured funding was withdrawn from the investment bank, and Lehman filed for bankruptcy on Monday, September 15th. The financial condition of American International Group (AIG), a large, complex insurance conglomerate, had also deteriorated rapidly and on Tuesday, September 16th with the full support of the Treasury, the Fed announced an 85 billion dollar loan to AIG to support the firm whose failure it judged would have significant adverse effects on the economy.²⁰ A full-scale financial panic developed on Wednesday, September 17th after a major money market mutual fund "broke the buck" prompting widespread withdrawals from prime money funds and forcing the liquidation of their commercial paper holdings. The "flight to safety" pushed the 3-month Treasury bill yield to zero on September 17th.

¹⁴ The Fed publishes the current valuations of these assets regularly.

¹⁵ Federal Reserve Statistical Release H.4.1 "Factors Affecting Reserve Balances," July 3 and September 10, 2008, and 1A Memorandum Items, September 10, 2008.

¹⁶ Paulson (2008).

¹⁷ Volcker (2008), p. 2.

¹⁸ Wessel (2009), pp. 173–174 makes a related point.

¹⁹ The summary of these events comes from Board of Governors of the Federal Reserve System (2009b), February, pp. 6–8.

²⁰ The fiscal details of the Fed's support for AIG are reported in Board of Governors of the Federal Reserve System (2009b), February, p. 51.

The Fed's financial support for AIG was criticized immediately by some prominent members of Congress as a questionable commitment of taxpayer funds.²¹ At that point, and in light of the ongoing panic in financial markets, Fed Chairman Bernanke had little choice but to call Treasury Secretary Paulson to say that the Fed had been stretched to its limits and could not do anymore. Although Paulson apparently had been resisting such a move for months, Bernanke said it was time for the Treasury Secretary to go to Congress to seek funds and authority for a broader rescue of the financial system.²²

On Thursday eve, September 18th, Paulson and Bernanke made their case to the congressional leadership—that the Congress should authorize public funds to help stabilize the financial system. By that weekend, Congress and Paulson had agreed on the outlines of the 700 billion dollar Troubled Asset Relief Program (TARP).²³ To convince Congress to appropriate the funds, Bernanke argued that otherwise the US economy was at risk of a severe contraction, if not another Great Depression. When the House of Representatives rejected the initial TARP bill on Monday, September 29th, stocks plunged.²⁴ To overcome resistance to funding the TARP program, Bernanke continued to argue that the legislation was needed to prevent a severe contraction. By the time Congress was sufficiently worried to pass TARP and it was signed into law on Friday, October 3rd, the public was frightened as well.

Equity markets in the United States fell by over 30 percent in the four weeks to October 10th. Risk spreads rose dramatically throughout the credit markets as never before in the credit turmoil. High-yield corporate bond spreads over comparable off-the-run Treasuries spiked briefly to 16 percentage points and remained above 10 percentage points, well above their previous peak in the credit turmoil of 6 percentage points. A relatively modest contraction of economic activity due to financial distress associated with the deflation of house prices became the Great Recession.

This is not to argue against the Fed's support for AIG. The Fed faced a no-win situation in deciding whether or not to support AIG. A decision to *commit* substantial taxpayer resources in support of the financial system or one that *denies* taxpayer resources is inherently a highly charged, political, fiscal policy matter. Whatever the Fed decided would have lacked sufficient political legitimacy and undermined its independence for further fiscal action. The Congress would have become involved chaotically either way. The point is that an independent central bank cannot be responsible for delivering or deciding upon the delivery of fiscal support for the financial system.

4.4. Authority to pay interest on reserves

The Financial Services Regulatory Relief Act of 2006 gave the Fed the authority starting in 2011 to pay interest on reserves. In May 2008 the Fed asked Congress to expedite that authority to assist in its emergency credit policy initiatives. Following the passage of the Emergency Economic Stabilization Act of 2008, the Fed announced on October 6 that it would begin paying interest on required and excess reserve balances.

Initially, the rate paid on excess reserves was set at a spread below the targeted federal funds rate. Shortly thereafter, with the federal funds rate trading consistently below the target rate, the spreads were eliminated. Interest on reserves helped set a floor under the federal funds rate as the Fed created nearly a trillion dollars of reserves to help finance its credit initiatives in the fourth quarter of 2008.

Chairman Bernanke in his written testimony for the July 2009 *Monetary Policy Report to Congress* expressed the view that the authority to pay interest on reserves is perhaps the most important tool enabling the Fed to raise interest rates without first shrinking its balance sheet. However, in his July 2009 *Wall Street Journal* op-ed, Bernanke noted that the federal funds rate slipped below interest paid on reserves in the fall of 2008 because some large lenders in the federal funds market, such as government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac, and the Federal Home Loan Banks (FHLBs), are legally ineligible to receive interest on balances that they hold at the Fed.²⁵ Thus, lending by the GSEs, the FHLBs, and others in the federal funds market could impair the power of interest on reserves to put a floor under the federal funds rate again when the Fed tries to exit the near-zero federal funds rate setting.

Depository institutions eligible to receive interest on reserves have an incentive to attract federal funds from the GSEs and the FHLBs, and to deposit those funds at the Fed. Such arbitrage would tend to keep the federal funds rate from falling far below interest on reserves.²⁶ Nevertheless, such arbitrage cannot be counted upon absolutely to stabilize the federal funds rate close to interest on reserves, especially in periods of financial distress. Allowing the federal funds rate to fluctuate below interest on reserves would complicate interest rate policy needlessly by creating doubt about whether short-term interest rates that matter for borrowing and lending will follow interest on reserves or the federal funds rate.

The Fed has since been working to build the technical capacity to immobilize reserves to help raise the federal funds rate, if need be, without first shrinking its balance sheet. These techniques have problems of their own discussed in Section 6.1. Fortunately, a direct solution to the interest on reserves problem is available. The Fed's July 2009 *Monetary Policy Report to Congress* points out on p. 37 that interest paid on bank reserves worked successfully for other central banks to put

²¹ Blackstone and Yoest (2008) and Andrews et al. (2008).

²² Hilsenrath et al. (2008).

²³ The Economist (2008), p. 1.

²⁴ See The Wall Street Journal, September 30, 2008.

²⁵ Bernanke (2009).

²⁶ Bech and Klee (2009).

a floor under interbank rates in their economies even as bank reserves expanded aggressively.²⁷ The Fed could ask the relevant regulatory agencies, the Treasury, and Congress to help secure the interest on reserves floor in the United States by modifying regulations for the federal funds market to exclude all but depository institutions from lending in that market, or alternatively by allowing those institutions eligible to lend in the federal funds market to earn interest on balances at the Fed. So strengthened, interest on reserves policy would provide the Fed with a precise, flexible, and reliable means of raising interest rates as the economy recovers, regardless of the size of the Fed's balance sheet.

4.5. Joint statement by the Treasury and the Federal Reserve

On March 23, 2009 the Treasury and the Fed issued a joint statement that recalled the 1951 Treasury-Fed Accord on monetary policy discussed in Section 5 below.²⁸ Released in a period of great financial distress reflected in a DOW below 7000, and one year after the acquisition of Bear Stearns by JPMC, the March 23rd statement sought to clarify the boundary of responsibilities on monetary and credit policy between the Treasury and the Fed.²⁹ Entitled “The Role of the Federal Reserve in Preserving Financial and Monetary Stability,” the points of agreement were listed under the following headings:

- Treasury-Federal Reserve cooperation in improving the functioning of credit markets and fostering financial stability.
- The Federal Reserve to avoid credit risk and credit allocation.
- Need to preserve monetary stability.
- Need for a comprehensive resolution regime for systemically critical financial institutions.

Notably, the statement agreed that (i) Fed credit policy should aim to improve financial conditions broadly, and not allocate credit to narrowly defined sectors or classes of borrowers, (ii) government decisions to influence the allocation of credit are the province of the fiscal authorities, (iii) Fed credit policy should not constrain monetary policy needed to foster maximum sustainable employment and price stability, (iv) the Treasury will remove or liquidate the Maiden Lane facilities on the Fed's balance sheet, and (v) the Fed's independence with regard to monetary policy is critical for ensuring that monetary policy decisions are made with regard only to the long-term economic welfare of the nation.

The joint statement was welcome and had much to recommend it; nevertheless, it did not provide a set of *principles* that could serve comprehensively to clarify the boundary of responsibilities between the Treasury and the Fed.

5. Clarifying the boundary of central bank credit policy

The 1951 Accord between the Treasury and the Fed was one of the most dramatic events in US financial history. The Accord ended an arrangement dating from World War II in which the Fed agreed to use its monetary policy powers to keep interest rates low to help finance the war effort. The Truman administration urged an extension of the agreement to keep interest rates low in order to hold down the cost of the huge Federal government debt accumulated during the war. Fed officials argued that keeping interest rates low would require inflationary money growth that would destabilize the economy and ultimately fail.³⁰ The Accord famously reasserted the principle of Fed independence so that monetary policy might serve exclusively to stabilize inflation and macroeconomic activity.

Congress early on recognized that the Fed needed financial independence in order to conduct monetary policy effectively. The Fed is exempted from the congressional appropriations process in order to keep the political system from abusing its money-creating powers. The Fed finances its operations from interest earnings on its portfolio of securities. The Fed was given wide latitude regarding the size and composition of its balance sheet so it could react promptly, decisively, and independently to economic and financial conditions. In the early 1980s under the strong, independent leadership of Paul Volcker the Fed succeeded in establishing low inflation as the nominal anchor for monetary policy. Thus, Fed independence is today the institutional foundation for effective monetary policy.

The Fed has long executed credit policy in addition to monetary policy as “lender of last resort” to depository institutions. Credit policy is also subject to misuse for fiscal policy purposes. However, as long as Fed lending was relatively modest, temporary, and confined to depository institutions deemed solvent, and the Fed took good collateral against its loans, the potential for fiscal misuse was limited. Although the Fed has long needed an accord for credit policy, the lack of one was not a pressing matter.³¹

The enormous expansion of Fed credit in the turmoil – lending beyond depository institutions and acquiring non-Treasury securities – demands an accord for Fed credit policy to supplement the accord on monetary policy. A credit accord should set guidelines for Fed credit policy so that pressure to misuse Fed credit policy for fiscal purposes does not

²⁷ Bowman et al. (2010).

²⁸ Department of the Treasury and the Federal Reserve (March 23, 2009).

²⁹ Lacker (2009) and Plosser (2009).

³⁰ Hetzel (2001) and Stein (1969).

³¹ Goodfriend (1994) and Schwartz (1992).

undermine the Fed's independence and impair the central bank's power to stabilize financial markets, inflation, and macroeconomic activity.

Congress bestowed independence on the Fed only because it is essential for the Fed to do its job effectively.³² A healthy democracy requires full public disclosure and discussion of the expenditure of public funds. The congressional appropriations process enables Congress to evaluate competing budgetary programs and to establish priorities for the allocation of public resources. Hence, the Fed – precisely because it is exempted from the appropriations process – should avoid, to the fullest extent possible, taking actions that can properly be regarded as within the province of fiscal policy and the fiscal authorities.

As emphasized repeatedly above, when the Fed purchases Treasury securities it transfers all the revenue from monetary policy to the fiscal authorities and hence does not infringe on their fiscal policy prerogatives. Monetary policy, perhaps with the help of interest on reserves, respects the integrity of fiscal policy fully.

Fed credit policy is another matter entirely, because all financial securities other than Treasuries or their equivalent carry some credit risk and all lending involves the Fed in potentially controversial disputes regarding credit allocation. When the Fed extends credit to private or other public entities lacking the “full faith and credit” backing of the US government, the Fed is allocating credit to particular borrowers, and therefore taking a fiscal action and invading the territory of the fiscal authorities.

As emphasized in Sections 3 and 4.1 above, even fully collateralized lending that is riskless for the Fed exposes taxpayers to losses if the borrower fails subsequently. Fed credit that finances the exit of uninsured or unsecured lenders to a financial institution that fails while the loan is outstanding will have stripped the bank of collateral that could otherwise be available to cover the cost of insured deposits or other government guarantees.

It is important to appreciate the difficulties to which the Fed exposes itself in the pursuit of credit policy initiatives that go beyond ordinary last resort lending to depository institutions. The Fed must decide how widely to expand its lending reach. Lending farther afield creates “an implied promise of similar actions in times of future turmoil,” as Volcker put it, which the Fed may then be inclined to accommodate.³³ Fed presence in one credit market can drain lending from nearby credit channels and prompt calls for support in neighboring credit classes. The Fed must determine the relative pricing of its loans based on risk and collateral. The Fed must be accountable for its credit allocations and the returns or losses on its loans or security purchases. The public deserves transparency on Fed credit extensions beyond ordinary lending to depository institutions. Yet, congressional oversight opens the door to political interference in the Fed's lending or non-Treasury acquisitions. The Fed is exposed to pressure to exploit the central bank's off-budget status to circumvent the appropriations process.

Moreover, the Fed and the fiscal authorities must cooperate on banking, financial, and payments system policy matters. This interdependence exposes the Fed to political pressure to make undesirable concessions with respect to its credit policy initiatives in return for support on other matters. Worse, the Fed could be pressured to make concessions on monetary policy to deflect pressure regarding credit policy.

5.1. “Accord” principles for central bank credit policy

By its very nature then, credit policy has the potential to create friction between the independent central bank and the fiscal authorities. That friction is evident in the tense relationship between the Fed and Congress in the aftermath of the credit turmoil. The problem is that credit policy undoes “Treasuries only” so to speak, and uses some of the revenue from monetary policy to acquire non-Treasury assets without the authorization of the fiscal authorities. Credit policy must direct public funds to specific borrowers, at a minimum favoring one class of creditors or one sector of the economy over another.

As discussed in Section 2 above, even the central bank acquisition of government agency debt or securities packaged by government agencies is problematic. Except in the rare cases when Congress has granted “full faith and credit” backing to government agency debt or securities packaged by government agencies, acquisition of such securities by the central bank has allocative consequences because it steers credit in a particular direction and confers an implied preferential status enhancing that agency's creditworthiness.

Central bank credit policy must be circumscribed with clear, coherent boundaries.³⁴ One could deny credit policy powers to the central bank altogether by requiring the central bank to pursue a “Treasuries only” asset acquisition policy. But credit policy has been useful in the recent turmoil and last resort lending to temporarily illiquid but solvent depositories has long been a valued part of independent central banking. Moreover, conventional last resort lending is reasonably compatible with central bank independence. Last resort lending to supervised, solvent depositories, on a short-term basis, against good collateral provides multiple layers of protection against ex post losses and ex ante distortions. So the fiscal policy consequences of conventional last resort lending are likely to be minimal, and the scope for conflict with the fiscal authorities small.

³² The following paragraphs are from Broaddus and Goodfriend (2001).

³³ See the excerpt from Volcker's April 2008 speech quoted in Section 4.2 above, and the discussion of the “limited commitment” problem in Goodfriend and Lacker (1999).

³⁴ Friedman (1962), pp. 232–234.

On the other hand, expansive credit initiatives – those that extend a central bank’s credit reach in scale, maturity, and collateral to unsupervised non-depository institutions and the purchase of non-Treasury securities – inevitably carry substantial credit risk and have significant allocative consequences. Expansive credit initiatives infringe significantly on the fiscal policy prerogatives of the Treasury and Congress and properly draw the scrutiny of the fiscal authorities. Hence, expansive credit initiatives jeopardize central bank independence and should be circumscribed by agreement between the fiscal authorities and the central bank.

Such reasoning suggests the following three principles as the basis for a Treasury-Fed “accord” for central bank credit policy. To reiterate, Congress bestows Fed independence only because it is necessary for the Fed to do its job effectively. Hence, the Fed should perform only those functions that must be carried out by an independent central bank. The main idea is to preserve the Fed’s independence to react flexibly and decisively to stabilize economic and financial conditions while maintaining a credible commitment to low inflation.

Principle 1: As a long run matter, a significant, sustained departure from a “Treasury only” asset acquisition policy is incompatible with Fed independence.

Principle 2: The Fed should adhere to “Treasury only” except for occasional, temporary, well-collateralized ordinary last resort lending to solvent, supervised depository institutions.

Principle 3: Fed credit initiatives beyond ordinary last resort lending should be undertaken only with prior agreement of the fiscal authorities, and only as bridge loans accompanied by take-outs arranged and guaranteed in advance by the fiscal authorities.

5.2. Pinnacle financial oversight authority

The Dodd-Frank financial reform law of 2010 establishes a “Financial Stability Oversight Council” chaired by the Treasury Secretary with nine other voting members including the Fed Chairman and five non-voting members. The Stability Council is authorized to identify risks to the financial stability of the United States, promote market discipline, and respond to emerging threats to the stability of the United States financial system.

The Stability Council was established as a pinnacle authority with responsibility for the entire financial system. The idea was that the pinnacle authority should have jurisdiction to address threats to financial stability originating anywhere in the economy with all the regulatory tools available in government. In other words, the guiding principle was to create a “one stop shop” systemic regulator. Among other things, to be the “one stop shop” systemic regulator that reformers had in mind, the pinnacle authority would have the responsibility to grant or deny fiscal support for particular firms or sectors in financial distress.

During the debate on the Dodd-Frank legislation, consideration was given to making the Fed the pinnacle financial oversight authority. The discussions in Sections 4.2 and 4.3 above make clear, however, that the pinnacle financial oversight authority cannot be lodged in an independent central bank. To grant or deny taxpayer support for the financial system is fiscal policy. To force a central bank to make fiscal policy, especially such contentious fiscal policy decisions, would politicize the central bank and destroy its independence. The Dodd-Frank law chose correctly to lodge the pinnacle authority in a Stability Council outside the Fed.

6. Central banking at the zero bound and in the exit strategy

The Fed’s 2 trillion dollar balance sheet and near zero interest rate policy stance appear to have achieved some stability in economic and financial conditions.³⁵ However, the Fed must remain poised to tighten financial conditions on short notice if conditions warrant or to expand its balance sheet further if economic conditions weaken again. To be fully flexible at the zero interest bound the Fed must position itself to raise interest rates promptly against inflation if that becomes necessary, even *after* expanding its balance sheet *well beyond* two trillion dollars against deflation if that proves to be necessary. Credibility against deflation is tied to credibility against inflation.

This section considers two proposals to strengthen policy flexibility at the zero interest bound and in the exit strategy. First, it considers monetary policy options proposed by the Fed to immobilize reserves and help raise the federal funds rate, if need be, without first shrinking the Fed’s balance sheet. Second, it proposes to employ fiscal policy to enlarge surplus capital on the Fed’s balance sheet to secure its financial independence to pay interest on reserves in the exit strategy even after acting aggressively against deflation.

6.1. Monetary policy options to raise interest rates

The Fed has proposed a number of options to raise the federal funds rate in addition to interest on reserves.³⁶ The Fed’s suggestions involve monetary policy since they work by reducing or immobilizing aggregate bank reserves. The Fed

³⁵ Gagnon et al. (2010).

³⁶ Board of Governors of the Federal Reserve System (2009b), July, pp. 34–37.

contemplates publicly four options for draining reserves. The Fed itself acknowledges that two have serious drawbacks. First, the Fed could reduce reserves by selling some of its holdings of Treasury securities. The Fed recognizes that this option is limited by the stock of Treasuries available in its portfolio. Second, the Treasury could sell securities and deposit the proceeds with the Fed. But the Fed rightly does not want to rely on the Treasury to achieve its policy objectives.

The Fed is more favorably disposed to the third option. The Fed could drain bank reserves and absorb federal funds otherwise lent by GSEs, FHLBs, and other institutions by arranging large-scale reverse repurchase agreements. Such reverses would involve the sale by the Fed of securities from its portfolio with an agreement to buy the securities back at a slightly higher price. There are problems with this approach, too. Large-scale reverses would expose the Fed to substantial counterparty risk. This could complicate the Fed's management of financial markets, especially in time of financial turmoil. Simply put, the Fed should not put itself in the position of having to depend heavily on contractual arrangements with the private sector.

Fourth, the Fed could drain bank reserves by offering interest-earning term deposits to banks, analogous to certificates of deposit that banks offer their customers. The Fed is favorably disposed to this option, too. But, again, this option is not without problems. Fed term deposits would compete with Treasury bills and potentially create friction with the Treasury. Term deposits would be close substitutes for bank reserves. The introduction and management of interest on term deposits could destabilize the demand for reserves and complicate federal funds rate targeting with monetary policy as contemplated.

Another problem is that to raise the federal funds rate significantly with monetary policy, the Fed would have to return aggregate reserves to a level near to those prior to the credit turmoil. Large-scale reverse repurchase agreements or term deposit operations would have to be undertaken in advance over a span of time to pre-position monetary policy to take the modest actions needed to adjust the federal funds rate precisely and flexibly when the time comes.

Finally, draining bank reserves with large scale non-monetary managed liabilities would turn the Fed into a financial intermediary and jeopardize its independence by facilitating the perpetual funding of credit policy independently of monetary policy or interest rate policy. Moreover, there is no reason for the Fed to issue managed liabilities if the regulation of the federal funds market is modified as suggested in Section 4.4 above to secure the interest on reserves floor for the federal funds rate.

6.2. Enlarging surplus capital to secure financial independence

In order to employ interest on reserves independently to exit the zero interest bound without first shrinking its balance sheet, the Fed must secure its financial independence to pay interest on reserves. Confining its assets to short-term Treasury bills would hedge much if not all of the Fed's interest on reserves risk, since T-bill rates would follow interest on reserves closely as interest rates moved higher. However, short-term T-bills are perfect substitutes for reserves at the zero interest bound, and confining the Fed's portfolio to T-bills would preclude further monetary stimulus at zero interest.

To act decisively against *deflation* at the zero interest bound, the Fed must acquire long-term securities instead of T-bills and be prepared to expand its balance sheet well beyond 2 trillion dollars, if need be.³⁷ In other words, the Fed must be willing to assume a large maturity mismatch between its assets and liabilities and expose itself to substantial interest rate risk.

The Fed must also be prepared to reverse field should inflation become the problem, and raise interest on reserves with trillions of dollars of reserves and long-term securities on its balance sheet. Three broad outcomes are possible. There would not be a problem if the Fed managed stabilization policy so that long-term interest rates remain stable near a sustainable 3 percent real yield plus 1 to 2 percent inflation expectations consistent with the Fed's implicit inflation target. If the yield curve also remained upward sloping as interest on reserves exited the zero bound, then the Fed could finance interest on reserves with earnings on its long-term securities.

A negative cash flow problem could arise if the Fed were either insufficiently preemptive against deflation or insufficiently preemptive against inflation. If the Fed were too slow against *deflation*, buying long term securities at high prices and very low interest, then interest earnings could be insufficient to pay interest on reserves subsequently if the Fed had to raise interest on reserves against inflation before it could shrink its balance sheet. Alternatively, if the Fed were insufficiently preemptive against *inflation*, a negative cash flow problem could arise if subsequently the Fed had to raise interest on reserves above long term interest rates before it could shrink its balance sheet.

To be fully flexible against both deflation and inflation at the zero bound the Fed should enlarge surplus capital enough to *self-insure* the payment of interest on reserves in any scenario. The Fed could build up its capital account in one of two ways with the cooperation of the fiscal authorities. The fiscal authorities could transfer new Treasury securities directly to the Fed. Or the fiscal authorities could let the Fed retain interest earnings to build up surplus capital gradually. The first alternative is preferable because it is immediate. Either way, the enlargement of the Fed's capital account would have *no* fiscal cost as long as the Fed did not draw on the interest or the principal of its surplus capital. The Fed would simply return

³⁷ Goodfriend (2000), Section 3, pp. 1018–1028 discusses the mechanics of monetary policy stimulus at the zero interest bound, Section 2, pp. 1013–1018 discusses negative interest on reserves policy. See Curdia and Woodford (this issue) and Gertler and Karadi (this issue) for an analysis of credit policy stimulus at the zero bound.

to the Treasury all the interest on the Treasuries in its enlarged capital account.³⁸ Nevertheless, enlarging the Fed's surplus capital would secure its financial independence and greatly improve its macroeconomic stabilization powers at the zero interest bound.

7. Conclusion

The proposed classification of central bank policies into monetary policy, credit policy, and interest on reserves policy could be utilized productively in the Fed's internal deliberations and in its external communications to (1) improve the transparency of the Fed's operations for purposes of accountability and credibility, (2) distinguish the fiscal aspects of Fed policies for the purpose of clarifying the boundary of its independent responsibilities, (3) help secure the Fed's operational and financial independence to raise interest rates precisely and flexibly to sustain a non-inflationary recovery from the Great Recession, and (4) reinforce the sense that the Fed has the political independence and the determination to unwind its emergency liquidity measures while limiting their inflationary potential.

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³⁸ In early 2010, financial regulators in the United States issued collectively an advisory to remind institutions of supervisory expectations regarding sound practices for managing interest rate risk. See Board of Governors of the Federal Reserve System and Other Financial Regulators (2010). To build up the Fed's surplus capital is to follow that advice.