

CENTRAL BANKING IN THE CREDIT TURMOIL:
AN ASSESSMENT OF FEDERAL RESERVE PRACTICE

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Introduction

The recent credit market turmoil and severe contraction of economic activity challenged central banks around the world as never before. Central banks increased the stock of aggregate bank reserves enormously, and lowered targeted short-term interest rates nearly 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 today 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 1985.² And the Fed extended its credit reach well beyond depository institutions. By April 2009, the Fed had purchased around 400 billion dollars of mortgage-backed securities (MBS) guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae; and the Fed had extended over 200 billion dollars of loans to a special purpose vehicle created to purchase commercial paper.³

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 of 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.⁴

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 billion to 550 billion dollars. The Fed funded its enormous increase in lending with over 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 over 1.3 trillion dollars of Fed lending as of April 2009. Since then, the Fed mainly shifted the composition of its

² For a brief period following 9/11, Fed lending to banks rose above 30 billion dollars. Fed credits referenced here and in the text are overnight loans.

³ See Federal Reserve Statistical Release H.4.1 "Factors Affecting Reserve Balances."

⁴ See the Appendix to the Federal Reserve's *Monetary Policy Report to Congress*, February 2009.

assets, holding their total in a relatively narrow range--shrinking its lending to depositories and through various special facilities, rebuilding its holdings of Treasuries to 775 billion, increasing its holdings of mortgage backed securities to 1.25 trillion, and acquiring 168 billion dollars of federal agency debt securities.⁵

The Fed and other central banks around the world have undergone a stress test of their own, a 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 those observations to rethink central banking more generally.

This essay presents a framework for thinking about central banking in light of these extraordinary developments. My 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 to influence the level of short-term interest rates.

My three-fold classification did not matter much 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, my classification is essential to understand the extraordinary central banking initiatives in the current context.

The heart of the paper is the idea that monetary policy, credit policy, and interest on reserves policy all involve fiscal policy in important but different ways, and that each is best understood for our purposes in terms of its fiscal policy features. The fiscal policy perspective provides a useful means of identifying what each central bank policy contributes to stabilization policy. The paper employs the three-way classification together with the fiscal policy perspective to assess the effectiveness of various Federal Reserve policy initiatives in the credit turmoil.

The paper also considers questions of central bank independence from the fiscal authorities. Flexibility and decisiveness are essential for effective central banking. Independence is essential to enable a central bank to react flexibly and decisively to macroeconomic or financial shocks without first having to get the approval of the Treasury or Congress. Clearly, to be sustainable, independent central banking must be regarded as legitimate by the fiscal authorities and the public. The problem is how to identify the limits of independence on monetary

⁵ See "The Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet," starting in June 2009.

policy, credit policy, and interest on reserves policy in terms of their fiscal policy features so as to preserve a workable, sustainable division of responsibilities between the independent central bank and the fiscal authorities. With that in mind, the paper assesses Fed practice in the credit turmoil to identify scope for clarifying the boundary of responsibilities between the Fed and the fiscal authorities.

One of the main points of the paper is that pure monetary policy can be conducted independently by the central bank because the instructions that guide monetary policy to stabilize inflation and employment are clear and coherent, in principle, and “Treasury only” transfers all the revenue from monetary policy to the fiscal authorities. The situation is entirely different with regard to central bank credit policy. Instructions that currently guide and circumscribe central bank credit policy are not clear. Alan Greenspan has written 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 grants virtually unlimited authority to the Board to lend in “unusual and exigent circumstances.”⁶ As I emphasize below, credit policy owes its effectiveness to the fact that it *is* fiscal policy pursued by a central bank. So there is great potential for conflict between the central bank and the fiscal authorities on credit policy.

Applying the fiscal policy perspective to assess Federal Reserve practice in the credit turmoil, the paper finds that lack of clarity in the boundary of fiscal support for the financial system between the Fed and the fiscal authorities contributed importantly to the financial panic and the deterioration of macroeconomic conditions in the fall of 2008. On this reading of events, the paper proposes a set of “accord principles for central bank credit policy” to circumscribe the Fed’s credit policy powers. Reasoning along these lines, the paper finds that the Fed cannot be the “pinnacle financial stability oversight authority.”

In addition, the paper suggests that the Treasury and Congress should provide additional fiscal support for Fed stabilization policy by (1) modifying the regulation of the federal funds market to secure the interest on reserves floor for the federal funds rate, and (2) enabling the Fed to build up surplus capital to improve its flexibility to act decisively and credibly to maintain price stability at the zero bound on interest rate policy.

The balance of the essay proceeds as follows. Section 1 classifies central banking initiatives into monetary policy, credit policy, and interest on reserves policy. Section 2 explains how each central bank policy works in terms of its fiscal policy features. Section 3 assesses five actual Federal Reserve initiatives in the credit turmoil—the Term Auction Facility, lending to facilitate the acquisition of Bear Stearns by JP Morgan Chase, Fed support for AIG, emergency authority to

⁶ Greenspan (2010), page 17.

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 4 develops and presents the “accord principles for credit policy.” Section 5 considers introducing “non-monetary managed liabilities” and expanding “surplus capital” on the central bank balance sheet to facilitate policy effectiveness at the zero bound on interest rates and in the exit strategy. Section 6 is a brief conclusion.

1. Monetary Policy, Credit Policy, and Interest on Reserves Policy

According to my classification, *pure 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”⁷ 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 2008 was always zero. The Fed utilized pure monetary policy in the past to manage the federal funds rate and to pursue interest rate policy as directed by the Federal Open Market Committee. At the start of the credit turmoil in the summer of 2007, the Fed had on its balance sheet roughly 850 billion dollars of Treasury securities obtained in the course of supplying the economy with currency and bank reserves.

Pure credit policy involves changing the composition of the Fed’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.⁸ For instance, the hundreds of billions of dollars of TAF discount window credit auctioned to depositories from the fall of 2007 through the summer of 2008 was pure credit policy because it was financed with funds obtained from the sale of Treasuries from the Fed’s portfolio.

One can also imagine a combination credit and monetary policy in which newly created bank reserves are used to fund discount window lending or to purchase non-Treasury securities. The trillion dollars of bank reserves that currently finances a like volume of mortgage-backed securities on the Fed balance

⁷ Most Treasuries have been purchased outright, but a small fraction is held under repurchase agreements for liquidity purposes.

⁸ The distinction between monetary policy and credit policy was employed initially in Goodfriend and King (1988).

sheet represents a *combination credit and monetary policy*. All told, the Fed's credit initiatives totaled roughly 1.3 trillion dollars by April 2009. Since then, the Fed's initiatives have involved credit policy primarily, since the Fed kept high-powered money near 2 trillion dollars. Since then, the Fed shrank its lending to depositories and to special facilities, and rebuilt its holdings of Treasuries to 775 billion, increased its holdings of mortgage backed securities to 1.25 trillion, and acquired 168 billion dollars of federal agency debt securities.

Interest on reserves policy consists of varying the interest rate that the Fed pays on bank reserves while holding monetary policy and credit policy fixed. The Fed began paying interest on reserves in October 2008. Soon thereafter the Fed cut interest rates nearly to zero and interest on reserves has not mattered much since. However, interest on reserves will help the Fed to exit the zero bound on interest rate policy as the economy recovers, if need be, without first reversing the hundreds of billions of dollars of reserves created to fund credit policy.

Interest on reserves works this way. Given the great abundance of aggregate bank reserves, depositories will not pay more to borrow reserves in the interbank market than the rate they earn on reserve balances held at the Fed. And depositories 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 can employ the rate of interest on reserves as its policy instrument to exit the zero bound on interest rate policy, regardless of the quantity of reserves in the banking system.⁹ In other words, interest on reserves policy will allow the Fed to continue to fund credit policy with the help of monetary policy even as it pursues an independent interest rate policy.

2. Fiscal Aspects of Monetary Policy, Credit Policy, and Interest on Reserves Policy

Pure monetary policy involves fiscal policy in two ways. First, monetary policy influences the spread between the federal funds rate and interest paid on reserves by varying 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 in equilibrium, and hence a higher spread between the federal funds rate and interest paid on reserves. By varying the scarcity of reserves, monetary policy manages the federal funds rate given interest paid on reserves at zero or otherwise by maintaining a variable *tax* on reserves in the form of below market interest on reserves.

⁹ Goodfriend (2002), and Keister, Martin, and McAndrews (2008).

Second, the Fed returns to the Treasury all the interest (net of operating expenses) on the Treasuries that it holds. Hence, by adhering to a “Treasuries only” asset acquisition policy the Fed passes nearly all the revenue from monetary policy back to the Treasury and leaves all the decisions regarding the use of that revenue to the fiscal authorities. Moreover, the rate at which the Fed can acquire Treasuries over time in support of monetary policy is constrained by the rate of growth of high-powered money consistent with its low inflation objective. Fed interest payments to the Treasury in 2006 were around 30 billion dollars. Given the huge volume of Treasury debt outstanding and likely to remain outstanding, the Fed could manage monetary policy indefinitely without abandoning “Treasuries only.”

Pure credit policy by itself has basically no effect on the federal funds rate because it does not change aggregate bank reserves or interest paid on reserves. In my classification, the correct way to think of pure credit policy is as debt-financed fiscal policy. Why? Well, at the margin, the Fed returns to the Treasury the interest earned on Treasury securities that it holds; so when the Fed sells Treasuries to finance the acquisition of non-Treasury assets such as discount window loans or mortgage-backed securities, the result is just as if the Treasury financed this purchase by borrowing from the public.

Fed credit policy works by interposing the government between private borrowers and lenders and exploiting the government’s creditworthiness to lower private borrowing costs and facilitate credit flows. In doing so, however, the Fed essentially makes a fiscal policy decision to put taxpayer funds at risk. In contrast to holding US Treasury securities, or those securities backed formally by the “full faith and credit of the US government,” all Fed lending carries some credit risk and exposes the Fed, and ultimately taxpayers, to potentially costly and controversial disputes regarding credit allocation.

Even Fed lending that is collateralized fully and subject to a negligible risk of loss *exposes taxpayers to losses* if the borrower fails subsequently. For instance, Fed emergency lending that finances the withdrawal of uninsured claimants of a financial institution that fails subsequently strips that institution of collateral that would otherwise be available to cover the cost of insured deposits or other government guarantees. Thus, even if the Fed lends only against good collateral so as not to take appreciable credit risk itself, last resort 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 manage interest rate policy without imposing a tax in the form of below market interest on bank reserves. By separating monetary policy from interest rate policy, interest on reserves policy allows a central bank to satiate the market for bank reserves and drive the marginal liquidity

services yield on reserves to zero at any intended interbank rate target.¹⁰ That, in effect, allows the partial attainment of Friedman’s “optimum quantity of money” equilibrium with respect to bank reserves.

The elimination of the reserve tax would have a number of practical advantages. An abundance of costless, safe reserves would displace costly and risky private credit in the payments system. The savings would be passed to interest on bank deposits, inducing the public to substitute money balances for shopping time in making transactions. The availability of low opportunity-cost bank reserves would enable the central bank to limit the extension of its own credit in support of the payments system. Moreover, elimination of the tax on reserves would secure 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.

Employing interest on reserves policy to satiate the market for bank reserves would likely increase the government’s revenue from monetary policy. There would be a loss of transfers to the government associated with interest paid to banks on preexisting reserve balances. However, given the economization on reserves that the banking system has achieved, this loss would be small. On the other hand, the increase in aggregate bank reserves would generate significant revenue since interest rate spreads between longer-term Treasuries acquired with and overnight deposits at the central bank would exhibit term premia reflected in the Treasury yield curve.

Importantly, interest on reserves policy could be employed this way in conjunction with a “Treasuries only” asset acquisition policy to transfer all net revenue generated by interest rate policy to the fiscal authorities. Of course, this arrangement would also free monetary policy to fund credit policy, independently of interest rate policy.

3. Fiscal Aspects of Five Federal Reserve Initiatives

This section describes five Fed initiatives in the credit turmoil: the Term Auction Facility, 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

¹⁰ Evidence from the 1930s, the last time that interest rates hit the zero bound in the United States, indicates that short-term interest rates fell to ¼ percentage point when excess reserves rose above 10 percent of deposits. See Morrison (1966), page 44,

initiatives created problems for the Fed and for the effectiveness of its interventions to stabilize the economy.

The Term Auction Facility

In December 2007, the Fed approved the establishment of the Term Auction Facility (TAF) under which the Fed 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.

In the taxonomy of this paper, 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 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 of 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

¹¹ Armantier, Krieger, and McAndrews (2008).

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 has had much effect on the marginal interbank rates, the TAF program can be understood to have reduced funding costs of those banks caught with a persistent short-term funding shortfall.

Understood this way, the TAF program provides infra-marginal relief on funding costs for persistent interbank borrowers. To the extent that interest the Fed earns on TAF credit exceeds interest on the Treasury securities sold to fund it, and TAF credit is virtually riskless for the Fed because it has a secure collateral interest if the borrowing bank fails, the TAF provides that relief at little cost to the Fed.

It cannot be said, however, that the TAF provides 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 finances the exit of uninsured or unsecured lenders to a bank that fails while the TAF loan is outstanding, then the TAF will have stripped the bank of collateral that would be available otherwise to cover the cost of insured deposits or other government guarantees.

*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 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.

The point of this discussion is not to question the Fed's decision to provide financial support for the acquisition of Bear Stearns by JP Morgan Chase. What matters for our purposes 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.

¹² Board of Governors of the Federal Reserve System (2009), page 47.

¹³ See Geithner (2008).

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 institutions deemed to be in sound financial condition. The Fed went beyond these two conditions in this case. It lent to a limited liability company Maiden Lane I formed for the purpose of acquiring certain assets of Bear Stearns. 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 the Fed had all of the upside of the asset valuations and all but a small fraction of the downside by lending to Maiden Lane I. In effect, the Fed “purchased” the assets, a variety of risky mortgage obligations, derivatives, and hedging products acquired from Bear Stearns.

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, in turn, amounted to a *debt-financed fiscal policy purchase of a pool of risky private financial assets*. The Fed effectively acknowledged this in two ways. First, 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.¹⁴ Second, 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.”¹⁵

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

¹⁴ See Federal Reserve Statistical Release H.4.1 “Factors Affecting Reserve Balances,” July 3 and September 10, 2008, and 1A Memorandum Items, September 10, 2008.

¹⁵ Paulson (2008).

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.¹⁶

In retrospect, Volcker’s remarks can be seen as a kind of “life preserver” thrown to the Fed.¹⁷ 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 remarks could have prompted the Fed back in April 2008 to get the Treasury and Congress to appropriate resources to stabilize the financial system, should those resources be needed as the credit turmoil ran its course. Instead, the fiscal authorities were not then so involved, and the Fed remained exposed to having its balance sheet utilized as an “off budget” arm of fiscal policy.

Federal Reserve Support for AIG

Events surrounding the deterioration of financial conditions in the autumn of 2008 illustrate the consequences of allowing the Fed’s balance sheet to be *the front line of fiscal support for the financial system*.

On September 7 the Treasury and the Federal Housing Finance Agency announced they would place Fannie Mae and Freddie Mac into conservatorship. 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, 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. 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.

The Fed’s financial support for AIG was criticized immediately by some prominent members of Congress as a questionable commitment of taxpayer funds.¹⁸ At that point, and in light of the ongoing panic in financial markets, Fed

¹⁶ Volcker (2008), page 2.

¹⁷ Wessel (2009), pp. 173-4 addresses a closely related point.

¹⁸ Blackstone and Yoest (2008), and Andrews, de la Merced, and Walsh (2008).

Chairman Bernanke had little choice but to call Treasury Secretary Paulson to say that the Fed had been stretched to its limits and couldn't 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.¹⁹

On Thursday eve, September 18th, Paulson and Bernanke made their case to the congressional leadership—that the Congress should authorize a large expenditure of 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).²⁰

The problem was that in order to get Congress to appropriate the funds, Bernanke then had to argue 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 Tuesday, September 30th, stocks plunged.²¹ 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 the legislation passed on Friday, October 3rd, the public was thoroughly frightened. 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.

Getting the fiscal authorities to appropriate the TARP funds proved catastrophic. The conflict involved in persuading Congress to authorize funding for TARP attracted the public's attention around the world and caused a world-wide collapse of confidence. What was then a modest contraction of economic activity due to financial distress associated with the deflation of house prices was converted into an unprecedented world-wide panic and the "Great Recession."

Emergency 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

¹⁹ See the *Wall Street Journal* article written by Hilsenrath, Solomon, and Paletta (2008).

²⁰ The Economist (2008).

²¹ See the headline in the New York Times September 30, 2008.

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. Later, 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. Interest on reserves hasn't mattered much since the Fed cut interest rates nearly to zero in mid-December.

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. 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, evidently 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. Thus, it is reasonable to worry that 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. The *WSJ* op-ed suggests that if this difficulty arises, the Fed has at its disposal other options by which it could immobilize reserves to help raise the federal funds rate.

As outlined in Section 5, my feeling is that these other options have problems of their own, and that the Fed should seek to secure the power of interest on reserves to put a floor under the federal funds rate. After all, the Fed's July 2009 *Monetary Policy Report to Congress* points out on page 37 that interest paid on bank reserves worked successfully for other central banks to put a floor under interbank rates in their economies even as bank reserves expanded aggressively.

Given the demonstrated power of interest on reserves abroad, the Fed should ask 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 its balance sheet.

It is true that even without such modifications, 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.²² Nevertheless, such arbitrage cannot be counted upon absolutely to stabilize the federal funds rate close to interest on reserves. The point is that 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. Securing the interest on reserves floor for the federal funds rate would eliminate the problem.

Joint Statement by the Treasury and the Fed on Preserving Financial and Monetary Stability

In March 2009, the Treasury and the Fed issued a joint statement on “The Role of the Federal Reserve in Preserving Financial and Monetary Stability.” Released at the point of peak distress in financial markets reflected in the 6500 DOW, the statement acknowledged the need for a clarification of the boundary of responsibilities between the Treasury and the Fed in light of actual and potential complications that surfaced in their interventions the previous year beginning with the facilitation of the acquisition of Bear Stearns by JPMC in March 2008.²³

According to the statement the two institutions agreed 1) to cooperate in preventing and managing financial crises, 2) that the Fed alone is responsible for monetary policy and that its monetary policy independence is critical for the long-term economic welfare of the nation, 3) that the Fed should use all its tools in cooperation with the Treasury and other agencies to improve the functioning of credit markets, help prevent the failure of systemically important institutions, and to foster financial stability, 4) that the Fed’s lender-of-last resort responsibilities involve lending against collateral, secured to the satisfaction of the responsible Federal Reserve Bank, 5) that the Fed should improve financial conditions broadly and not aim to allocate credit narrowly, 6) that government decisions to allocate credit are the province of the fiscal authorities, 7) that the use of the Fed’s balance sheet in the pursuit of financial stability should not compromise its independence on monetary policy, 8) that the Treasury should help the Fed seek legislative action to provide additional tools to sterilize the effects of its lending or security purchases on the supply of bank reserves, 9) that the two institutions will work with Congress to develop a regime to allow the government to address at an early stage the failure of a systemically important financial institution within a

²² See Bech and Klee (2009).

²³ Around the same time, the presidents of the Federal Reserve Banks of Richmond and Philadelphia, Jeffrey Lacker and Charles Plosser, respectively, also called for clarifying the relationship between the Fed and the Treasury. See Lacker (2009) and Plosser (2009).

framework that spells out the roles of the Fed and other government agencies, 10) that the Treasury will remove from the Fed balance sheet the three Maiden Lane facilities.

The joint statement has much to recommend it. It establishes the principle that the Fed and the Treasury must recognize and respect each other's prerogatives. It reasserts the importance of the Fed's independence on monetary policy. And it implicitly recognizes the fiscal nature of the Maiden Lane facilities and the Treasury's responsibility for them. Nevertheless, the joint statement does not specify clearly the *principles* that one should use to clarify the *boundary of responsibilities* between the two institutions.

4. “Accord” Principles for 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 that the agreement be extended 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.²⁴ The Accord was only one paragraph, but it famously reasserted the principle of Fed independence so that monetary policy might serve exclusively to stabilize inflation and the macroeconomic activity.

The Accord restored the Fed's operational independence after the wartime interest rate peg. Thereafter, the Fed utilized monetary policy to manage the federal funds rate to achieve its macroeconomic objectives. 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 to enable it to 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.

²⁴ See Hetzel (2001), and Stein (1969).

The Fed has long executed credit policy in addition to monetary policy, usually 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.²⁵ Although the Fed has long needed an accord for credit policy, the lack of one did not seem to be a pressing matter.²⁶

The enormous expansion of Fed lending today—in scale, in reach beyond depository institutions, and in acceptable collateral—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 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.²⁷ 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.

When the Fed purchases Treasury securities, it lends to the Treasury. Doing so transfers all the revenue from monetary policy to Congress and the Treasury and hence does not infringe on their fiscal policy prerogatives. Pure monetary policy guided by a low inflation objective as described above, perhaps with the help of interest on reserves policy, respects the integrity of fiscal policy fully.

Fed credit policy as described above is another matter entirely, because all financial securities other than Treasuries 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 discussed in Section 2 above, and again with respect to the TAF, 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

²⁵ Schwartz (1992).

²⁶ Goodfriend (1994).

²⁷ The following paragraphs draw directly from Broaddus and Goodfriend (2001).

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 traditional 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.²⁸ Fed involvement in one credit class can drain lending from nearby credit channels. 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 choices. The Fed is exposed to congressional pressure to exploit the central bank’s off-budget status to circumvent the appropriations process.

Moreover, the Fed and the government 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.

Clarifying the Boundary of 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 today in the tense relationship between the Fed and Congress in the aftermath of the recent credit turmoil. The problem is that credit policy undoes “Treasury 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. Moreover, credit policy must direct public funds to specific borrowers. Whenever a central bank takes a credit policy action, it favors one sector over another.

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 securities or securities packaged by government agencies, acquisition of such securities by the central bank has allocative effects because it steers credit in a particular direction and confers a preferential status enhancing that agency’s creditworthiness.

²⁸ Goodfriend and Lacker (1999) discuss the “limited commitment” problem.

The scope for central bank credit policy must be circumscribed with clear, coherent boundaries.²⁹ 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 that would take away a policy option that has proven to be exceedingly useful in the credit 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 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 losses. 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.

On the other hand, expansive credit initiatives—those that extend a central bank’s credit reach in scale, maturity, 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. In order to secure its independence, a central bank’s credit policy reach should be confined to last resort lending as described above; lending beyond that should be authorized clearly by the fiscal authorities.

Such reasoning suggests the following principles as the basis for a “credit policy accord” between the Treasury and the Fed. 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: The Fed should adhere to a “Treasuries only” asset acquisition policy except for occasional, temporary, collateralized last resort lending to solvent, supervised depository institutions.

Principle 2: As a long run matter, a significant, sustained expansion of Fed credit initiatives beyond occasional, temporary, collateralized last resort lending to solvent, supervised depository institutions is incompatible with Fed independence.

²⁹ Friedman (1962), pp. 232-4.

Principle 3: Future 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 guaranteed in advance by the fiscal authorities.

An Independent Central Bank Cannot be the Pinnacle Financial Oversight Authority

At the core of financial reform legislation working its way through Congress is the proposal to establish a “pinnacle financial oversight authority” with responsibility for the whole financial system. The structure, scope, membership, and location of such an oversight body are matters of debate. Whatever other powers it acquires, in order to be the “one stop shop” systemic regulator that reformers have in mind, the pinnacle authority must be empowered to either *grant or deny taxpayer support* for particular firms or sectors in financial distress.

We saw recently that the decision to grant or deny public support to individual firms or sectors in times of financial turmoil is inevitably political, highly charged, and among the most contentious fiscal policy choices imaginable. And we saw that the Fed’s expansive credit initiatives in the recent credit turmoil put its independence in jeopardy. Whatever one thinks of establishing a pinnacle financial oversight authority, clearly it cannot be lodged in an independent central bank. To grant or deny taxpayer support for firms in financial distress 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.

5. Central Banking at the Zero Bound and in the Exit Strategy

The Federal Reserve’s two trillion dollar balance sheet appears to have achieved some stability in economic and financial conditions for the moment.³⁰ However, the Fed must be poised to tighten or relax its policy stance on short notice as conditions warrant. To be fully flexible at the zero bound on interest rate policy, the Fed must position itself to raise interest rates promptly against *inflation* if that becomes necessary, even with *trillions* of dollars of reserves on its balance sheet. Only then will the Fed be willing to expand its balance sheet *beyond* two trillion dollars against *deflation* if that proves to be necessary. Credibility against deflation is inexorably linked to credibility against inflation.

³⁰ See Gagnon, Raskin, Remache, and Sack (2010).

One concern mentioned earlier in the paper is that the interest on reserves floor for the federal funds rate is not fully secure. Another is that interest rate risk on the Fed balance sheet threatens its independence to finance the interest on reserves needed to steer the economy to a non-inflationary growth path.

This section considers and rejects a number of options proposed by the Fed to help raise the federal funds rate in lieu of securing the interest on reserves floor, including the use of “non-monetary managed liabilities.” The section then proposes expanding “surplus capital” on the central bank balance sheet to provide the Fed with the financial independence to handle the potential interest rate risk that the Fed will have to bear if it must exit the zero bound on interest rate policy to act against inflation with its balance sheet expanded beyond 2 trillion dollars.

Monetary Policy Options to Raise Interest Rates in the Exit Strategy

The Fed has proposed a number of options to raise the federal funds rate in addition to interest on reserves.³¹ According to my classification, the Fed’s suggestions all involve monetary policy since they work by reducing or immobilizing aggregate bank reserves. One problem with the options is that, as a technical matter, in order to raise the federal funds rate significantly by means of pure monetary policy, the Fed would have to return the stock of reserves to a level near to those prior to the credit turmoil. Large-scale operations would have to be undertaken in advance over a span of time to pre-position monetary policy to take the modest operations needed to adjust the federal funds rate precisely and flexibly when the time comes.

The Fed contemplates publicly four options for draining reserves. The Fed itself acknowledges that the first 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. I see 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

³¹ Board of Governors of the Federal Reserve System, *Monetary Policy Report to Congress*, July 21, 2009, pp. 34-7.

markets, especially in time of financial turmoil. Simply put, I don't think the Fed should put itself in the position of having to depend to such a large extent 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. And term deposits would be close substitutes for bank reserves. Hence, the introduction and management of interest on term deposits could destabilize the interest elasticity of the demand for reserves and complicate federal funds rate targeting with monetary policy as contemplated.

More generally, I believe it is inadvisable for the Fed to utilize *non-monetary managed liabilities* on a large scale because they would turn the Fed into a financial intermediary and jeopardize its independence by facilitating the perpetual funding of credit policy independently of monetary policy. Moreover there is no reason for the Fed to issue managed liabilities if the regulation of the federal funds market is modified to secure the potential for interest on reserves to put a floor under the federal funds rate.

Financing Interest on Reserves in the Exit Strategy

In principle, the authority to pay interest on reserves obtained in the fall of 2008 could give the Fed the *operational independence* to raise the federal funds rate if the economy turns up sharply or if inflation or inflation expectations begin to rise—even with trillions of dollars of bank reserves on its balance sheet financing assets that cannot be unwound promptly.

However, credible operational independence for the Fed to exit the zero bound also needs the support of *financial independence*. Essentially, the Fed needs to build up surplus capital in advance commensurate with *the potential for greatly enlarged interest rate risk* that it might incur if it were to expand its balance sheet well beyond 2 trillion dollars against deflation.³²

Financial independence need not be a problem if the Fed manages stabilization policy well so as to maintain long term Treasury rates in the vicinity of a sustainable 5 percent yield, a 3 percent real yield plus a 2 percent inflation premium consistent with the Fed's apparent inflation target.³³ If short rates remain below long rates as interest rate policy exits from the zero bound so that the yield

³² 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 "Advisory on Interest Rate Risk Management," January 2010.

³³ Board of Governors of the Federal Reserve System (2009), page 39.

curve remains upward sloping, then Fed net interest income could remain comfortably positive.

However, a cash flow problem could arise if the Fed is insufficiently preemptive against deflation *or* insufficiently preemptive against inflation. If the Fed acts too slowly against deflation and later expands its balance sheet aggressively by buying long term bonds at high prices and very low interest, then the Fed could incur a cash flow problem if subsequently it must normalize interest rate policy before it can shrink its balance sheet. Alternatively, a cash flow problem could arise if the Fed is insufficiently preemptive against inflation, and subsequently must raise interest on reserves far above long term interest rates to stabilize inflation before it can shrink its balance sheet.

To make fully credible the Fed's independence to exit the zero bound, the Treasury should allow the Fed to retain net interest income to build up surplus capital. The Fed would hold its cushion of surplus capital in Treasury securities to supplement its income, or to sell, if need be to offset a negative cash flow problem. In effect, allowing the Fed to build up capital this way, the Treasury would undertake a fiscal policy action to buy back debt which the Fed could hold. The Treasury could finance the buyback by selling an equivalent volume of securities. Clearly, the buyback would have no immediate fiscal consequences if the Fed did not need the additional interest income. The debt in the Fed's capital account would be retired from the Treasury's point of view because the Fed would return the interest to the Treasury. This arrangement would simply enhance the Fed's independent potential to pay interest on reserves with a greatly enlarged balance sheet.

6. 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 in the following ways: (1) to improve the *transparency* of the Fed's operations for purposes of accountability and credibility, (2) to distinguish the fiscal aspects of Fed policies for the purpose of clarifying the *boundary* of its independent responsibilities, (3) to help secure the Fed's *operational capability* to raise interest rates precisely and flexibly to sustain a non-inflationary recovery from the "Great Recession," and (4) to 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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