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

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## Introduction

The credit market turmoil and severe contraction of economic activity have challenged central banks around the world as never before. Central banks increased the stock of aggregate bank reserves enormously, and brought targeted short-term interest rates to (near) zero in many countries. For instance, the Federal Reserve increased the stock of bank reserves in the United States from under 10 billion dollars in August 2007 to around 800 billion dollars in April 2009 as the federal funds rate approached zero.

Central bank lending expanded greatly to facilitate credit flows. For instance, Federal Reserve loans to depository institutions stand 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] Since the turmoil began in 2007 the Fed extended its credit well beyond depository institutions. Most significantly, the Fed purchased around 400 billion dollars of mortgage-backed securities guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. And the Fed 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 LLC 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 LLC 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 has written 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 over 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,

[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," April 30, 2009.
[4] See the Appendix to the Federal Reserve's *Monetary Policy Report to Congress*, February 24, 2009.

plus around 800 billion dollars growth of bank reserves, and around 300 billion dollars of additional deposits provided by the Treasury, for a grand total of over 1.3 trillion of Fed lending as of April 2009.

The extraordinary scale and scope of the policy actions undertaken by the Fed and other central banks to stabilize the banking system, to facilitate non-bank credit flows, and to act against the contraction of employment and output presents a unique opportunity to reconsider the nature of central banking. 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 extraordinary actions, but to observe how central banks put their various powers to work in extraordinary circumstances, and to use those observations to rethink central banking more generally.

Our reconsideration begins by classifying core central banking initiatives as monetary policy, credit policy, or interest rate policy. 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 the central bank balance sheet, holding high-powered money fixed, from Treasuries to credit to the private sector or other government entities in the form of loans or securities purchases. Interest rate policy involves adjusting interest paid on bank reserves to influence the level of short-term interest rates.

This three-fold taxonomy did not matter much in the past. For instance, until the recent credit turmoil the Fed's 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 taxonomy is useful in the current context for a number of reasons. For instance, it will allow us to appreciate the potential for monetary policy alone to stimulate economic activity at the zero bound on interest rate policy. And it will allow us to understand how interest on reserves will enable interest rate policy to exit from the zero bound, regardless of the size of the Fed's balance sheet.

Monetary, credit, and interest rate policy involve *fiscal policy* in important but different ways. We will see that monetary policy needs more support than is usually granted from the fiscal authorizes to be effective at the zero bound, in part because interest on reserves needs fiscal support to assure its effectiveness in exiting from the zero bound. And credit policy owes its effectiveness to the fact that it *is* fiscal policy pursued by a central bank. One of the main points of this essay is that because credit policy is

fiscal policy, central bank independence is incompatible over time with all but limited, temporary last resort lending to depository institutions.

The essay presents a framework for rethinking central banking in light of the extraordinary developments in the credit turmoil—near zero interest rates, the huge expansion of bank reserves, the unprecedented expansion of the scale and scope of central bank lending. The contention is that one must understand central banking in terms of its essence—the independent authority to manage monetary policy, (limited) credit policy, and interest rate policy—and build an institutional framework to preserve that independence so that central banks can make their greatest possible contribution to stabilization policy.

With that in mind, the balance of the essay proceeds as follows. Section 1 details the taxonomy to be employed in the remainder of the essay. Section 2 outlines the fiscal dimensions of monetary, credit, and interest rate policies. Section 3 explains how monetary policy can stimulate economic activity at the zero bound, and how interest on reserves could allow interest rate policy to exit the zero bound. Section 4 reviews the fiscal policy dimensions of 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 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 proposes a set of principles to clarify the boundary between the Treasury and Fed in an "Accord for Federal Reserve Credit Policy" along the lines of the famous 1951 "Fed-Treasury Accord on Monetary Policy."

## 1. Monetary Policy, Credit Policy, and Interest Rate Policy

Monetary policy refers to central bank policy actions that change the stock of high-powered money, i.e., currency plus bank reserves. A central bank can add reserves to the banking system or supply currency to the public by purchasing securities; it can drain reserves or currency by selling securities. The Fed's power to determine the stock of high-powered money has enabled it 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 securities obtained in the course of supplying the economy with currency and bank reserves.

To avoid carrying credit risk on its balance sheet, ordinarily the Fed satisfied virtually all of its asset acquisition needs in support of monetary

policy by purchasing Treasury securities and those securities deemed to have the explicit backing of the Treasury, an acquisition policy known as "Treasuries only."[5] A *pure monetary policy action* is one in which the Fed either injects newly-created reserves into the banking system by buying Treasury securities or drains reserves from the banking system by selling Treasury securities. The Fed returns to the Treasury all but a small fraction of the interest on the Treasury securities that it holds; the remainder is utilized to pay its operating expenses. 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."

Things changed recently with the Fed's aggressive use of credit policy to deal with the turmoil in credit markets. The Fed takes a *pure credit policy* action as distinct from a monetary policy action by shifting the composition or size of its portfolio of assets, holding high-powered money fixed. For example, the first large-scale credit policy actions undertaken by the Fed in early 2008 involved lending to banks funds acquired by selling Treasury securities from its portfolio, with no effect on high-powered money or on the size of its balance sheet.

To date, the Fed has extended over 1.3 trillion dollars of credit to banks and non-bank financial institutions, to special purpose entities to finance the acquisition of commercial paper, and to purchase mortgage-backed securities. The Fed financed around 800 billion dollars of its massive extension of credit with newly-created bank reserves. In this sense, one can say that 800 billion dollars of its unprecedented credit initiative was a *combination monetary and credit policy*. An additional 250 billion dollars of credit extended by the Fed, funded by the sale of a like amount of Treasury securities, was *pure credit policy*. The remaining 300 billion dollars of credit extended by the Fed utilized a like amount of new Treasury deposits. Since the Treasury financed those deposits by issuing debt, this portion of Fed asset acquisition was *pure credit policy*, too.

The Fed acquired the authority to pay interest on reserves in the autumn of 2008. It has utilized interest on reserves since then to free interest rate policy from monetary policy. This *interest-on-reserves regime* works as follows. The Fed buys enough securities with newly-created bank reserves to drive the federal funds rate down to the zero bound.[6] Simultaneously, the Fed pays interest on reserves at the intended (overnight) federal funds rate,

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

[6] Goodfriend (2002), and Keister, Martin, and McAndrews (2008).

say 2%. Banks don't lend federal funds below 2% since they earn 2% overnight by holding reserves at the Fed. The overnight federal funds rate would not trade much above 2% either, as long as the Fed nearly satiates the market for reserves.

Evidence from the 1930s, the last time interest rate policy hit the zero bound in the United States, indicates that short-term interest rates fell to around 25 basis points once excess reserves rose above 10 percent of deposits.[7] In other words, the reserves market was nearly satiated with a relatively modest volume of reserves. The Fed would be free to expand bank reserves beyond that threshold for reasons other than targeting the federal funds rate. In other words, an interest-on-reserves regime would allow the Fed to pursue monetary policy independently of interest rate policy. Of course, Fed credit policy funded with Treasury deposits or with sales of Treasury securities from the Fed's portfolio could be pursued independently of both interest rate policy and monetary policy.

## 2. Fiscal Aspects of Monetary, Credit, and Interest Rate Policy

For a given payment of interest on reserves, at zero or otherwise, 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 marginal liquidity services yield on reserves. For instance, by draining reserves from the banking system the central bank raises the marginal liquidity services yield, which 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. In effect, monetary policy raises the federal funds rate relative to interest paid on reserves by increasing the *scarcity* of reserves which, in turn, *taxes* reserves by paying *below market* interest on reserves.

Second, the Fed collects the tax as interest on the Treasury securities that it purchases in the process of supplying bank reserves and non-interest bearing currency. Treasury securities so purchased are "retired" from the government's point of view, since the Fed returns to the Treasury interest paid on these securities. The monetized Treasury securities represent the seigniorage from the creation of high-powered money. Importantly, by adhering to a "Treasuries only" asset acquisition policy, the Fed passes *all* the tax revenue from monetary policy through to the Treasury.

[7] Morrison (1966), page 44.

Fed credit initiatives described above employ fiscal policy to improve flows in credit markets. When the Fed substitutes credit to the private sector or another government entity for a Treasury security in its portfolio, the Fed can no longer return to the Treasury the interest it had received on the Treasury security that it held. In other words, when the Fed sells a Treasury security to make a loan, it's as if the Treasury issued new debt to finance the loan. *Credit policy executed by the Fed is really debt-financed fiscal policy*. Fed loans may perform well, throwing off interest payments by a margin appropriate for the risk above interest paid by the Treasury to fund the loan. Nevertheless, Fed credit policy is risky, and inherently involves contentious questions of fiscal policy.

Fed credit policy "works" by exploiting the creditworthiness of the government to acquire funds at a riskless rate of interest in order to make those funds available to financial institutions and other borrowers that otherwise would have to pay a much higher risk premium to borrow, if they can borrow at all under the circumstances. Collateralized Fed credit policy is risky not only because the borrower might default, but also because the collateral might prove to be worth less than the loan in the event of a borrower default. In effect, Fed credit policy works by interposing the US Treasury between lenders and borrowers in order to improve credit flows. In doing so, however, the Fed essentially makes a fiscal policy decision to put taxpayer funds at risk. In the event of a default, if the collateral is unable to be sold at a price sufficient to restore the initial value of Treasury securities on the Fed's balance sheet that was used to fund the credit initiative, then the flow of Fed remittances to the Treasury will be smaller after the loan is unwound. The Treasury will have to make up the shortfall somehow, namely, by lowering expenditures, raising current taxes, or borrowing more and raising future taxes to finance the increased interest on the floating debt or to retire the debt.

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 succeeds in lending 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 have the capacity to impose significant losses on taxpayers.

The interest-on-reserves regime utilizes a fiscal policy instrument granted to the central bank, the authority to pay interest on reserves, to improve the efficiency of interest rate policy and free monetary policy to pursue other objectives. The interest-on-reserves regime would nearly eliminate the tax on reserves. 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, by eliminating the tax on reserves, the interest-on-reserves regime 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.

As indicated above, the advantages of the interest-on-reserves regime could be achieved at a relatively low threshold of aggregate reserves to deposits. At that minimum, the central bank would likely have little problem financing the payment of interest on reserves out of interest earned on its securities in as much as all but a relatively small portion of its securities will have been purchased with non-interest bearing currency. Moreover, the interest-on-reserves regime could be run in conjunction with pure monetary policy, that is, with a "Treasuries only" asset acquisition policy.

Switching to the interest-on-reserves regime would have two effects on the government's revenue from money creation. There would be a loss of transfers to the government associated with interest paid to banks on preexisting reserve balances. However, interest paid on the increase in reserves would be self-financing on average over time since interest rate spreads between longer-term Treasuries and overnight deposits at the central bank should normally exhibit term premia reflected in the Treasury yield curve. In fact, the interest-on-reserves regime would likely yield a net increase in seigniorage over time, since preexisting reserve balances are so small.

## 3. Monetary Policy at the Zero Bound and Interest on Reserves in the Exit Strategy

Monetary policy expansion at the zero bound can be effective if the public is confident that the central bank will expand bank reserves by *as much and for as long as needed* to act against the downturn. The credibility of aggressive monetary stimulus, however, depends on the public's belief

that the central bank is confident of its independence to *exit promptly and aggressively* from the zero bound if need be to contain inflation. This section explains the leverage that monetary policy can utilize to stimulate economic activity at the zero bound, and the leverage that interest on reserves can exert to exit from the zero bound, regardless of the size of the central bank's balance sheet.

*Monetary Policy at the Zero Bound on Interest Rate Policy*

To appreciate the power of monetary policy to stimulate economic activity at the zero bound, we must distinguish between narrow and broad liquidity services. Narrow liquidity services are provided by the medium of exchange allowing banks and the public to economize on transactions costs. When short-term nominal interest rates are near zero, there is little opportunity cost of holding currency, bank reserves, and transactions deposits. Banks and the public enlarge their holdings of transactions balances, and the demand for narrow liquidity services of money is nearly satiated.

The demand for broad liquidity services is evident in the large stock of time deposits and certificates of deposit, money market mutual fund shares, and short-term government securities willingly and routinely held by the public in relation to consumption and income in the United States, *even though the short-term real rate of interest on such financial assets has averaged around 1 to 2 percent.*[8] For instance, in 2005 the US public held around one year's GDP, then about 12.5 trillion dollars, in M3 plus short-term Treasuries.

Broad liquidity services are not exhausted when the interbank interest rate hits the zero bound. In fact, the hallmark of the credit turmoil has been the "flight to safety," an increased demand to hold wealth in such financial assets.

The demand for broad liquidity provides the leverage for monetary policy to stimulate the economy even after the interbank interest rate hits the zero bound.[9] At the zero bound, high-powered money and short-term Treasury securities provide identical (broad) liquidity services because narrow liquidity services are satiated. Hence, to exert monetary (as distinct from credit) policy stimulus at the zero bound, a central bank must inject reserves by purchasing illiquid assets such as long-term Treasury bonds.

[8] Campbell (1999), page 1233.
[9] This following draws on Goodfriend (2000).

Increasing the stock of broadly liquid financial assets acts on a number of margins to stimulate economic activity at the zero bound.

First, expanding the stock of broad money brings down the "marginal broad liquidity services yield" and activates the portfolio rebalancing channel. An injection of broad liquidity that drives down its implicit yield induces banks and the public to hold assets that are less liquid but have a higher explicit rate of return. Equilibrium prices of nonmonetary assets are bid up to restore the required return differential. Second, higher asset prices raise collateral values and the net worth of households and firms, and thereby help bring elevated credit spreads back down. Higher asset prices and reduced credit spreads, in turn, stimulate desired consumption out of current income and help revive investment.

Third, the public might utilize reserves injected into the economy to repay bank loans. In this case, the injection of reserves would not act directly to increase the stock of broad liquidity. But the reserve injection would be expansionary nevertheless, in addition to enabling the public to pay off bank loans without shrinking the aggregate money stock. The reserve injection would increase the ratio of reserves to deposits; and it would free up banking resources that had been engaged in managing and monitoring the loans that were paid off. Both effects would reduce the equilibrium external finance premium and encourage the extension of new loans by reducing risk-weighted assets and improving risk-weighted capital ratios, and by making available organizational banking resources to manage new lending. Not only would the banking system be better positioned to extend loans to those still in need of credit, in so doing it would expand the stock of aggregate bank deposits and broad liquidity.

Two additional implementation problems would have to be overcome to make monetary stimulus effective at the zero bound. Ordinarily, relatively small changes in bank reserves suffice to manage interest rate policy. We saw above, however, that monetary policy exerts its stimulus through a large "monetary aggregate" at the zero bound. Hence, a large, sustained increase in bank reserves in the trillions of dollars likely is necessary for monetary policy stimulus to have much effect through the three broad-liquidity channels of monetary transmission outlined above. Moreover, the effectiveness of even such a large expansion of bank reserves against the contraction would depend on the public's belief in the central bank's *willingness* to expand reserves by as much and for as long as needed to act against the contraction. The required expansion of bank reserves would be credible only if the public also believed that the central bank could exit the

zero bound on interest rate policy promptly and aggressively if need be to act against inflation, regardless of the size of its balance sheet.

*Interest on Reserves in the Exit Strategy*

In principle, the authority to pay interest on reserves obtained in the fall of 2008 should give the Fed the *operational independence* to raise the federal funds rate against inflation 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 long term Treasuries and credit programs that cannot be unwound promptly.

However, credible operational independence for the Fed to exit the zero bound also needs the support of *financial independence*. The question is: can the Fed be sure to have sufficient interest income to finance independently whatever interest must be paid on reserves as the economy emerges from the zero bound, or might the Fed need additional fiscal support from the Treasury? This question should be addressed even though nearly 1 trillion dollars of non-interest bearing currency provides the Fed with a large cushion of net interest income.

Financial independence need not be a problem if the Fed manages stabilization policy well in the current turmoil 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.[10] If short rates remain below long rates as interest rate policy exits from the zero bound so that the yield curve remains upward sloping, then Fed net interest income could remain comfortably positive.

However, a cash flow problem could arise if the Fed is either insufficiently preemptive against deflation or insufficiently preemptive against inflation. If the Fed acts too slowly against deflation, it could suffer negative cash flow problems as interest rates normalize if it bought long bonds to act against the contraction and deflation after long rates had fallen well below their steady state levels. If the Fed acts too slowly against inflation, negative cash flow problems could arise if the Fed has to raise interest on reserves far above long term interest rates to stabilize inflation.

To make fully credible the Fed's operational independence to use interest on reserves to exit the zero bound, the Treasury should guarantee the Fed's financial independence to pay interest on reserves. This the Treasury could do by allowing the Fed to retain net interest income to build up

[10] Board of Governors of the Federal Reserve System (2009), page 39.

"surplus capital." The Fed would hold its cushion of surplus capital in short term Treasury securities to be sold if need be to offset a negative cash flow problem. By allowing the Fed to build up capital this way, the Treasury would be undertaking a fiscal policy action to utilize tax revenue to buy back short term government debt. Debt in the Fed capital account would be retired from the Treasury's point of view because the Fed would return the interest to the Treasury. Under this arrangement, however, the Fed would have the independence to sell the short term Treasuries in its capital account to help finance interest on reserves, and any other operational expenses, if that were to become necessary.

## 4. 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 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 auctions term loans against a wide variety of collateral to depository institutions judged to be in sound condition.[11] Since January 2009 the minimum bid rate has been interest paid on reserves. TAF loans are 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 federal funds market. Banks recognized a substantial credit risk in lending to each

[11] Armantier, Olivier, Sandy Krieger, and James McAndrews (2008).

other given that federal funds lending is generally unsecured. Even if collateral were taken, the ability to liquidate it could be impaired severely in a widespread default. These factors reflected the substantial broad-liquidity premium on reserve balances at the Fed. 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 federal funds market can be highly persistent. For instance, big banks tend to be borrowers of federal funds and smaller banks lenders. When the credit turmoil hit, those banks that were persistent borrowers of federal funds endured a sharp persistent jump in their funding costs.

Persistent borrowers of federal funds would bid most aggressively for TAF term credit. By substituting TAF credit for more expensive federal funds borrowed they could lower their borrowing costs. Persistent lenders of federal 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 federal funds 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 has had much effect on the marginal federal funds rate, 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 borrowers of federal funds. 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 may provide 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 taxpayers to losses if the borrower fails subsequently. If TAF credit finances uninsured or unsecured

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

lenders to a bank that fails while the 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. Thus, the Fed must be careful when extending one to three month term credit through the TAF to make sure that bank receiving TAF credit will remain solvent over the term of the loan.

*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, and 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. Investment banks were not in this group. Hence, the Fed had to invoke emergency powers to lend in support of the acquisition.

As a central bank 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,

[13] See Geithner (2008).

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, in terms of the terminology presented in this paper, the loan to Maiden Lane I was *a 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 JPMCB, 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 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]

[14] See Board of Governors of the Federal Reserve System statistical release H.4.1 from July 3 and September 10, 2008, and 1A Memorandum Items, September 10, 2008.
[15] Paulson (2008).
[16] Volcker (2008), page 2.

In retrospect, Volcker's remarks can be seen as a kind of "life preserver" thrown to the Fed. 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 to get the Treasury and Congress to appropriate financial 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 important members of Congress as a questionable commitment of taxpayer funds, in effect, a "bridge too far."[17] 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 and tell him 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

[17] Blackstone and Yoest (2008), and Andrews, de la Merced, and Walsh (2008).

time for the Treasury secretary to go to Congress to seek funds and authority for a broader rescue of the financial system.[18]

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 the700 billion dollar Troubled Asset Relief Program (TARP).[19]

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.[20] 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 political fighting involved in persuading Congress to authorize funding for TARP, in conjunction with other aspects of the ad hoc fiscal response to the financial turmoil, precipitated the collapse of confidence that gave rise to the severe contraction of spending and employment in the fourth quarter of 2008 that we continue to endure.

*Emergency Authority to Pay Interest on Reserves*

The Financial Services Regulatory Relief Act of 2006 gave the Fed the authority starting in October 2011 to pay interest on reserves for the first time in its history. In May 2008 Bernanke asked that Congress give the Fed immediate authority to pay interest on reserves. Using authority granted under 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. The payment of interest on reserves was intended to

[18] See the *Wall Street Journal* article written by Hilsenrath, Solomon, and Paletta (2008).
[19] The Economist (2008).
[20] See the headline in the New York Times September 30, 2008.

assist in maintaining the federal funds rate close to the target set by the FOMC by creating a floor under interbank market rates. Initially, the rate paid on excess reserves was set as 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 became less important when the federal funds rate target was reduced to ¼ percent in mid-December.

Nevertheless, the Fed's authority to pay interest on reserves is timely and valuable because, in principle, it gives the Fed the operational capacity to *exit credibly* from the zero bound without first drawing down the stock of bank reserves. Unfortunately, in practice, the fact that the federal funds rate has fallen somewhat below the rate of interest paid on reserves indicates that some financial institutions holding balances at the Fed that trade in federal funds market are *not* authorized to receive interest on those balances. The Fed should act promptly to *secure* the power of interest on reserves to exit the zero bound by seeking additional legislation if necessary so that (1) all institutions with balances at the Fed eligible to trade federal funds can receive interest that the Fed pays on reserves, and (2) the Fed can retain interest income to build up surplus capital sufficient to finance the payment of interest on reserves in addition to its operating expenses, as needed.

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

The joint statement issued on March 23, 2009 by the Department of the Treasury and the Federal Reserve "The Role of the Federal Reserve in Preserving Financial and Monetary Stability" indicates that the authorities recognize that overall financial policy is well-served by clarifying the relationship between the Treasury and the Fed.[21] The two institutions agree 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,

[21] Jeffrey Lacker and Charles Plosser, presidents of the Federal Reserve Banks of Richmond and Philadelpha, respectively, recently called for clarifying the relationship between the Fed and the Treasury. See Lacker (2009) and Plosser (2009).

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 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 boundary between the Fed and the Treasury must be managed carefully so the two institutions can operate productively in managing financial stability. 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 March 23rd joint statement does not specify clearly the *principles* that one should use to clarify the *boundary of responsibilities* between the two institutions. It is on this last point that the present essay hopes to contribute by distinguishing among monetary, credit, and interest rate policy.

## 5. An Accord for Federal Reserve Credit Policy

The 1951 "Accord" between the United States Treasury and the Federal Reserve 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 Treasury 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.[22]

[22] See Hetzel (2001), and Stein (1969).

The so-called 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 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 and temporary and confined to depository institutions deemed solvent, and the Fed took good collateral against its loans, the potential for fiscal misuse was limited by today's standards.[23] So although the Fed has long needed an "Accord" for its credit policy, a credit accord did not seem to be a pressing matter.[24]

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.

*Federal Reserve Independence*

The 1951 Accord restored the Fed's instrument 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 central bank funds 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 quickly and independently to unanticipated short-run developments in the economy. 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.

[23] Schwartz (1992).
[24] Goodfriend (1994).

*Asset Acquisitions Should Sustain Federal Reserve Independence*[25]

Congress bestowed financial independence on the Fed only because it is essential for the Fed to do its job effectively. 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 leaves all the fiscal decisions to Congress and the Treasury and hence does not infringe on their fiscal policy prerogatives. Pure monetary policy as described above—the acquisition of Treasury securities with newly created bank reserves—respects the integrity of fiscal policy fully.

Federal Reserve 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, it 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 may expose 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 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.[26] 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

[25] This section draws directly from Broaddus and Goodfriend (2001).
[26] Goodfriend and Lacker (1999) discuss this "limited commitment" problem in detail.

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.

Finally, 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.

*Accord Principles for Federal Reserve Credit Policy*

The above reasoning suggests that the following principles should serve as the basis for a comprehensive Credit Policy Accord between the Treasury and the Federal Reserve. To repeat, 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 in an independent central bank. The main idea is to preserve the Fed's independence to act flexibly and aggressively with monetary and interest rate policy, and (limited) credit policy so that the Fed can maximize its contribution to price stability, financial market stability, and macroeconomic stability.

Principle 1: As a long run matter, a significant, sustained expansion of Fed credit initiatives beyond, ordinary, temporary last resort lending to depository institutions is *incompatible* with Fed independence. The Fed should adhere to a "Treasuries only" asset acquisition policy except for occasional and limited discount window lending to depository institutions deemed to be solvent.

Principle 2: The Treasury and the Fed should agree to cooperate, as soon as the current credit turmoil allows, to shrink the central bank's lending reach by letting Fed credit programs run off or by moving them from the Fed's balance sheet to be managed elsewhere. Any further expansion of Fed credit programs in the current turmoil should be undertaken by agreement with the Treasury to minimize the risk of committing to a course of action that proves subsequently to be ill-advised.

Principle 3: The Fed has employed monetary policy in the service of credit policy in the current emergency by creating around 800 billion dollars of bank reserves to finance its credit initiatives, with the possibility of more to come before the credit turmoil ends. The Treasury and the Fed should cooperate to guarantee that the use of monetary policy for the fiscal purpose of funding credit policy does not undermine price stability.

Principle 4: To strengthen the nation's commitment to price stability, the Treasury and the Fed should agree on a low long run inflation objective. Anchoring inflation expectations will improve the effectiveness of monetary policy and hold down the inflation premium in long-term Treasury bond rates.

Principle 5: The Treasury should help the Fed, by seeking congressional legislation if necessary, to secure the capacity of interest on reserves to provide a fully credible exit strategy from the zero bound on interest rate policy, regardless of the Fed's credit policy commitments or the size of its balance sheet. Specifically, the fiscal authorities should support interest rate policy by (1) allowing every institution that holds balances at the Fed and trades in the federal funds market to receive the rate of interest that the Fed pays on the reserves of depository institutions, and (2) allowing the Fed to retain interest income to build up surplus capital enough to finance the payment of interest on reserves and any operating expenses in the event of adverse cash flow problems.

Principle 6: The credibility and effectiveness of *monetary policy* to act aggressively against deflation at the zero bound requires that the Fed and the public are both confident that *interest rate policy* can exit the zero bound promptly and aggressively against inflation if need be, whatever the Fed's *credit policy* commitments. The Treasury and the Fed should agree promptly to cooperate according to the above principles so that the Fed can act preemptively, flexibly, and aggressively against *either* rising inflation or a deepening contraction and deflation, if either demands Fed action.

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