Research

The Federal Reserve's Crisis Response

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The Fed intervened very creatively, in sort of a classic lender of last resort way.
-John Cochrane[1]

Despite the near hundred years of experience in central banking in the United States, "the financial and economic crisis that started in 2007 tested central banks as they had not been tested."[2] As a result, central banks, led aggressively by the U.S.'s Federal Reserve Board, developed, deployed, and in most cases later shuttered, a number of tools aimed at injecting liquidity and supporting financial markets.

The goal of this brief is to lay out the many extraordinary programs and facilities created by the Federal Reserve, as well as the deployment of more conventional policy tools, as means for addressing the extreme credit and liquidity constraints occurring during the crisis. One conclusion: the Federal Reserve did little in the way of targeting specific institutions for "bailouts" or picking winners and losers.[3]

While their response to the financial crisis is certainly open to criticism,[4] it's clear in reviewing the new and expanded facilities the Federal Reserve operated that they were for the most part targeted at calming and providing liquidity to entire financial sub-markets (or supporting specific instruments therein) rather than specific institutions. That is, many facilities were created with fairly liberal qualification criteria (e.g., all 2a-7 money market funds) in an attempt to encourage participation. Moreover, some programs were structured or altered — notably access to the discount window — to lower the barrier to participation and encourage use of the facility. As Gary Gorton and Andrew Metrick put it, "the externalities of liquidity demand, with potential negative outcomes of credit cycles, bank runs, and financial crises….[have] been the main focus of the Federal Reserve since its founding."[5] And so one can think of the Fed's crisis response as an amped up version of its traditional role.

It should be noted, however, that several programs, especially several of those administered by the Federal Reserve Bank of New York, are operated via a restricted list of primary broker-dealers, who then deal with a wider set of institutions in the broader marketplace. Moreover, some of the Federal Reserve's (and more generally, the federal government's) earliest crisis responses *were* targeted at specific institutions (i.e., Bear Stearns and AIG) when it perhaps appeared the crisis could be contained. From there, the aperture of the Fed's liquidity and credit facilities quickly expanded to include wide swaths of non-banks and asset classes.

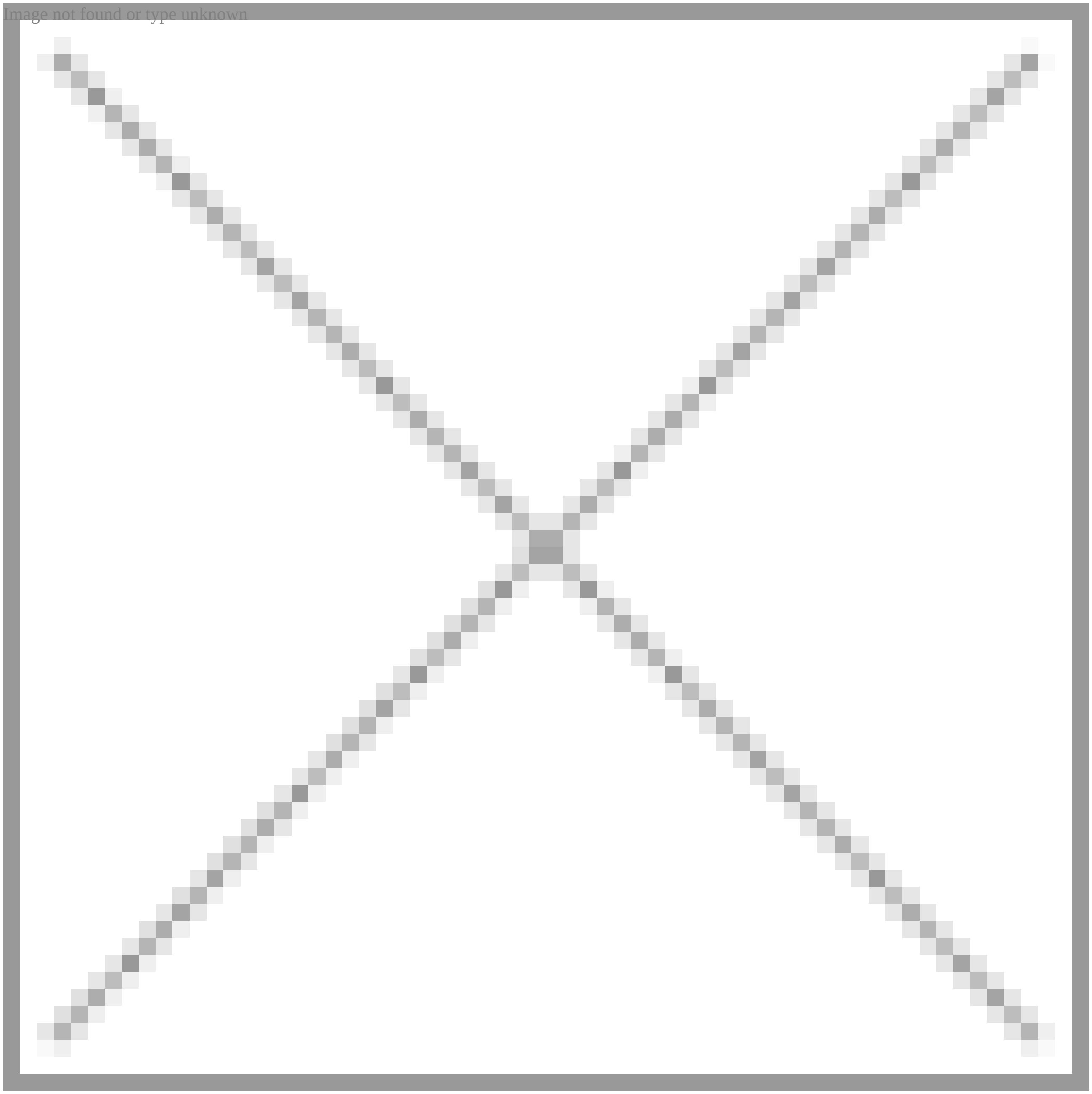
The following is a complete list of policies and programs the Federal Reserve undertook, beginning in 2007, as a means to respond to the developing credit market crisis.

The Federal Reserve System undertook "a series of unprecedented policy actions to contain the broader risks the financial crisis posed to the economy."[6] Overall, the Fed's actions could be categorized as attempting to accomplish one of three broad goals: provide liquidity, repair ailing financial markets, and support crucial financial institutions.[7]

CONVENTIONAL INTEREST RATE TOOLS

Federal Funds Rate – ongoing

Beginning in summer 2007, the Board began aggressively lowering the target federal funds rate. By actively attempting to push down policy interest rates, the Fed was attempting to encourage additional spending in the economy by reduce consumer and commercial borrowing costs.



Source: Data compiled from “Historical Changes of the Target federal Funds and Discount Rates,” Federal Reserve Bank of New York, http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html.

Having eventually ran into an effectively zero lower bound on short term rates toward the beginning of 2009, the FOMC started to strategically issue explicit “policy guidance” with the intent of lowering or preventing rising long term rates.

LENDER OF LAST RESORT TOOLS

Discount Window[8]

Traditionally, the Fed’s discount window was not a large source of borrowing—it was an available source of overnight funding to address shortfalls owing to one-time operational issues and other unforeseen but temporary conditions.[9] This is commonly known as primary credit. However, as the crisis unfolded, institutions became increasingly wary of counterparty risk as well as the (perceived) decreasing value of collateral. Interbank funding – the usual source for much of this type of overnight/short-term collateralized borrowing – became increasingly scarce.[10]

Use of the discount window was traditionally self-limited by two factors. First, this type of borrowing entailed rates above those that were typically found through more conventional channels.[11] Second, use of the discount window, if it became known, could provide a signal to the market that the institution was financially unsound, and should be subject to further scrutiny in interbank lending.[12]

As a crisis response, the discount window was altered in four major ways:[13]

1. The FOMC reduced the discount rate (or put another way, decreased the spread between the discount rate and target federal funds rate):
2. maturity of loans was extended from overnight to up to 90 days;
3. available credit was offered through auctions to counteract the potentially stigmatizing effect of using this facility;
4. the Fed lent to foreign central banks to ease pressures on their financial institutions (primarily) and those institutions’ domestic counterparties (secondarily).

Term Auction Facility (TAF) – December 2, 2007 – March 8, 2010

A program created within the above discount window authority (granted by Section 10B), TAF issued 28-day (and later 84-day) loans and auctioned them off to a wider set of institutions than that of the primary credit program, but those still considered financially sound. These loans were fully collateralized and allocated in a Dutch auction with no reserve price. Evidence indicates that participants paid a premium of anywhere from 37-150 basis points to borrow from TAF rather than the discount window, due to the attendant stigma effects.[14]

Primary Dealer Credit Facility (PDCF)– March 17, 2008 – February 1, 2010

Aimed at easing liquidity constraints for the secured funding of securities, primarily known as the repo market, this facility was made available to “primary dealers.”[15] It provided overnight funding against semi-liquid and “priceable” assets, notably those used in certain repo agreements as well as mortgage-backed securities, at a rate equal to the discount rate.

Term Securities Lending Facility (TSLF)[16] – March 11, 2008 – February 1, 2010

Another program aimed at the Federal Reserve Bank of New York's primary dealers. In contrast to some of the above program, TSLF was designed to not have any effect on reserve levels in the banking system. TSLF is a 28-day facility that allows eligible participants to receive Treasury general collateral[17] in exchange for program-eligible collateral. The idea was that, though banks were holding onto large amounts of highly-rated securities (e.g., MBS), much of these had become illiquid. They could now swap these securities for much more liquid and in-demand Treasuries and the like.

Currency Swap Agreements[18]

Dollar Liquidity Swap Lines – December 12, 2007 – February 1, 2010 and May, 2010 – Present

These central bank liquidity swaps are a way of addressing stressed dollar funding markets overseas, which have the potential to disturb domestic financial institutions. In these bilateral arrangements, the FOMC provides a given amount of dollars to a foreign central bank in exchange for the equivalent amount of foreign currency (based on the current prevailing market exchange rate). The foreign bank then agrees to return the original dollar amount after a specified term (1-90 days) in exchange for the original foreign currency swap amount. Because the foreign bank is charged interest on their dollar drawn amount, and because the FOMC is not a counterparty to any lending the foreign bank does to any of its member banks, the FOMC does not bear any interest rate or credit risk.

Foreign Currency Liquidity Swap Lines — April 6, 2009 – February 1, 2010 and November 30, 2011 – Present

Similar to the above, this program was instituted as a means to provide foreign currency-denominated liquidity to foreign central banks as well domestic institutions. Though specific arrangements were established with a handful of central banks, no assets or funding has thus far been exchanged or otherwise activated.

CREDIT MARKET LIQUIDITY TOOLS

Commercial Paper Funding Facility (CPFF) – October 7, 2008 – February 1, 2010

"The goal of the CPFF was to address temporary liquidity distortions in the commercial paper market."[19] The commercial paper market provides an important and (prior to 2007) rapidly increasing source of short-term (1 to 9 months) funding for banks, nonbank financial institutions, and other nonfinancial corporations. Roughly half the supply comes in an unsecured form, which relies heavily on issuing institution's credit ratings for underwriting. The other form is the asset-backed type, with mortgage-backed securities increasingly serving the role of collateral. As these MBS became illiquid or otherwise difficult to value, this in turn had severe follow-on effects for the commercial paper market. Further, the day after Lehman Brothers declared bankruptcy, Reserve

Primary "broke the buck" and investors began redeeming investments in high-yield money market funds and switching to lower-yielding funds, which were limited to Treasuries and other relatively risk-free government securities.[20] The CPFF allowed the New York Fed, via its primary dealers, to purchase commercial paper at a premium (different for secured and unsecured paper) above a benchmark rate, providing cash to the issuer for a three-month tenor. This allowed the issuer to access a longer maturity than was otherwise available in the market, and relax pressures on money market funds.

Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) – September 19, 2008 – February 1, 2010

Another 13(3) program created in response to the wave of redemption requests among money market mutual funds, AMLF was executed by the Federal Reserve Bank of Boston to loan funds to banks to purchase asset-backed commercial paper. The loans are extended as non-recourse loans against the value of the purchased asset-backed commercial paper and have maturities corresponding to the remaining maturity of the purchased assets (up to 270 days, or 120 days for depository institutions). Funds were extended at the current (at the time) discount rate.

Money Market Investor Funding Facility (MMIFF) – November 24, 2008 – October 30, 2009

By lending to specifically established special purpose vehicles (SPVs), the MMIFF extended funds for the purpose of purchasing highly rated ABCP and other short-term instruments (e.g., CDs, bank notes, etc.) from money market funds and qualified investors. The SPVs borrow 90 percent of purchase funds from the MMIFF, purchase highly-rated short-term assets (outstanding maturities between 7 and 90 days), leaving a subordinated amount equal to ten percent of the asset value. Once the assets mature, the SPVs pay back the loan to the facility. The entire program is authorized to fund purchases of up to $600 billion in assets ($540 billion in direct funding). The program uses five SPVs as conduits for the asset purchases, and consists of 50 eligible financial institutions "chosen by representatives of the U.S. money market mutual fund industry…because they are among the largest issuers of highly rated short-term liabilities."[21]

Term Asset-Backed Securities Loan Facility (TALF) – November 25, 2008 – June 30, 2010

TALF was specifically designed to boost issuance of asset-backed securities, with underlying collateral consisting of a wide range of assets: SBA loans, commercial mortgages, auto and student loans, credit cards, and securitized credit more generally.[22] In order to encourage participation, loans from the TALF were made on a non-recourse basis, though with haircuts assessed against collateral. This program also differed from many of the other liquidity programs by offering much longer terms (three or five years). The program was authorized up to an amount of $200 billion, with 35 percent of that amount ultimately lent. Treasury offered up to $20 billion as a cushion against losses in the event of asset depreciation, to protect against Federal Reserve balance sheet exposure.[23]

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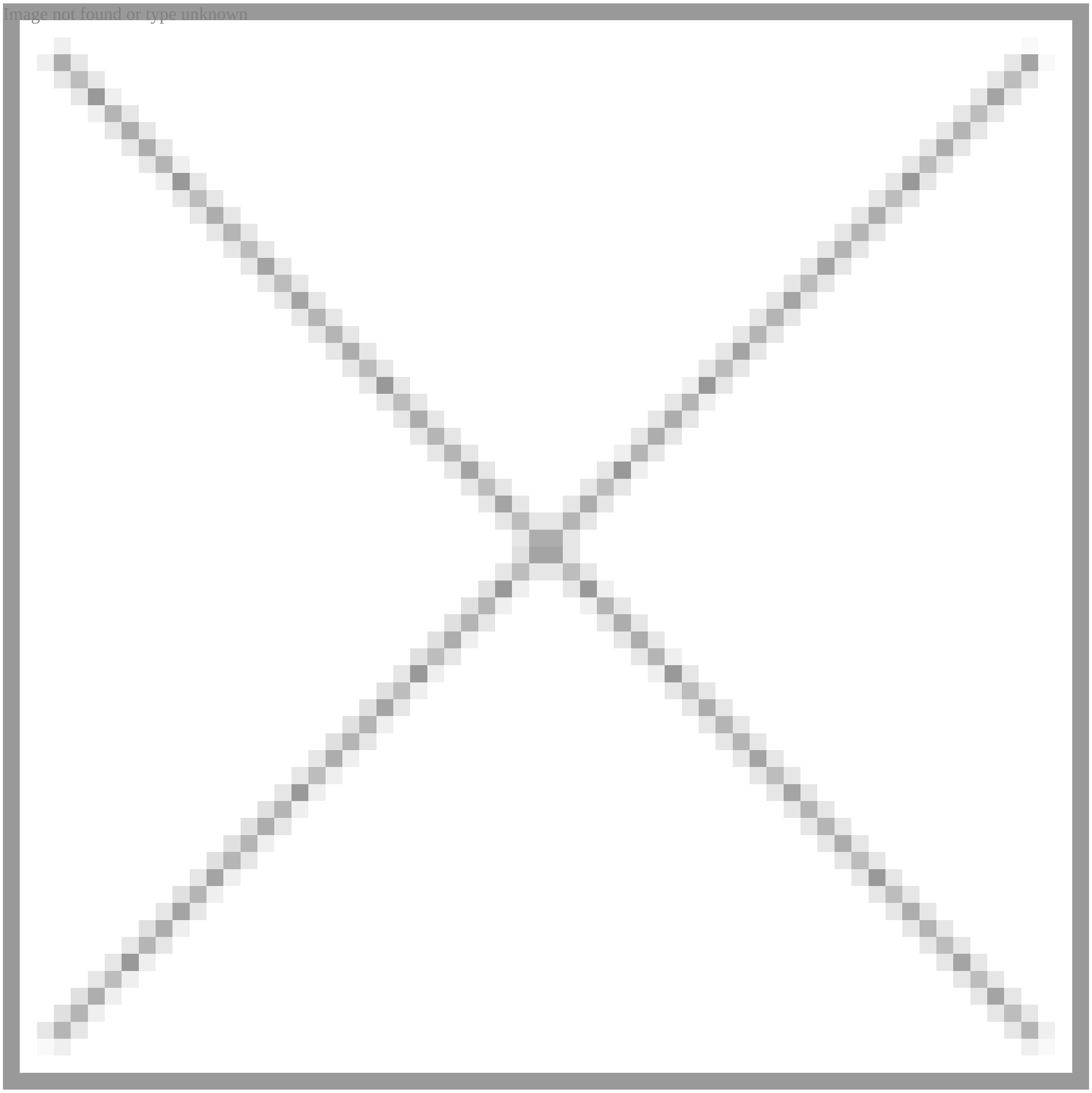
Source: Various, “Facilities and Programs,” Regulatory Reform, Board of Governors of the Federal Reserve System, August 2, 2013. http://www.federalreserve.gov/newsevents/reform.htm. Note: In some cases numbers may include more than one separate entity within a single holding company.

EXPANDED OPEN MARKET OPERATIONS

Agency Mortgage-Backed Securities Purchases[24]

- December 2008 – August 2010: purchase of $175 million in direct obligations of GSEs and Federal Home Loan Banks.
- January 2009 – August 2010: purchase of $1.25 trillion in agency-guaranteed MBS.

- September 2011 – present: continuing reinvestment of MBS principal payments into agency MBS
- September 2012 – present: continuing purchase of additional MBS of $25-45 billion per month.



Source: Michael Fleming, et. al., "What if? A Counterfactual SOMA Portfolio," *Liberty Street Economics*, Federal Reserve Bank of New York, August 14, 2013, http://libertystreeteconomics.newyorkfed.org/2013/08/what-if-a-counterfactual-soma-portfolio.html. Note: The above chart simulates the "System Open Market Account" holdings under a projected counterfactual according to the current rate of securities purchases in 2007, as compared to actual recent historical purchases.

Treasuries Purchases and Maturity Extension Program and Reinvestment Policy[25]

- March 2009 – October 2009: purchase of $300 billion in longer-term Treasuries
- November 2010 – June 2011: additional purchase of $600 billion in longer-term Treasuries
- January 2013 – present: continuing purchases of longer-term Treasuries of $45 billion per month
- September 2011 – June 2012: purchase $400 billion of Treasuries with 6-30 year remaining maturity and sell equal volume of securities with less than three year remaining term.
- June 2012 – December 2012: continuation of maturity extension in the amount of $267 billion.

Single-Tranche Repurchase Agreements – March 2008 – December 2008

The Federal Reserve Bank of New York, via auction through its primary dealers list, offered term financing (repurchase agreements) using Treasuries and agency MBS/debt as collateral.[26]

INSTITUTION-SPECIFIC SUPPORT

Maiden Lane – April 29, 2008 – Present

The Maiden Lane transactions consist of the formation of three separate LLCs created specifically to facilitate an orderly takeover one institution as well as "alleviate capital and liquidity pressures" at another.[27]

Maiden Lane LLC – In early 2008, Bear Stearns came under severe funding pressure, and faced a potential failure that regulators felt would result in a highly disruptive systemic event.[28] After considering the idea of extending a 28-day collateralized loan directly to Bear Stearns in lieu of declaring bankruptcy, the New York Fed determined that such a loan would be insufficient to get through the company's liquidity constraints. Instead, JP Morgan agreed to a merger via stock swap, but wished to avoid taking on a large mortgage asset portfolio in the process. Therefore, a new entity (LLC) was created, with a $28.82 billion loan extended from the New York Fed (at primary credit rate) and $1.15 billion from JP Morgan (at a primary credit plus rate) as a subordinate loan, against approximately $30 billion in mortgage-related assets (based on March 14, 2008 fair value).[29]

Source: “Maiden Lane Transactions: Maiden Lane ,” Federal Reserve Bank of New York

The loans were extended for ten-year terms, to allow sufficient time to unwind the assets. The senior loan from the New York Fed was paid in full in June 2012, with remaining revenues used toward JP Morgan’s junior loan, and any remaining funds going to the New York Fed.

Maiden Lane II LLC – Following the September 16, 2008 government takeover of AIG (wherein the Treasury Department took control of a 79.9 percent equity stake in return for the New York Fed extending an $85 billion credit facility, later reduced to $60 billion), the New York Fed created this second Maiden Lane holding company, with a $19.5 billion loan. The loan had a six-year term and a rate of one-month LIBOR plus 100 points, against $20.5 billion in residential mortgage-backed securities (mostly non-agency). MLII sold the last of the RMBS book on February 28, 2012, which resulted in full repayment of the New York Fed loan, a deferred purchase agreement with AIG, and a net $2.8 billion remainder.[30]

Maiden Lane III LLC – Similar to Maiden Lane II, this transaction vehicle was created to unwind/sell off a book of business consisting of credit default swaps from AIG subsidiary AIG Financial Products. This holding company consisted of a $24.3 billion loan from the New York Fed, $5 billion equity stake from AIG, against $29.3 billion in assets. Full repayment to the New York Fed and AIG were made in June and July 2012, respectively, with a net gain of $6.6 billion.[31]

Bank of America[32] – January 16, 2009 – September 2009

As part of Bank of America's takeover of Merrill Lynch, it assumed a large number of assets, many of which significantly added to the company's risk profile, or otherwise were unexamined for the sake of expediency and closing the deal.[33] In January, the federal government announced "a package of guarantees, liquidity access, and capital" as a means of reassuring and backstopping potential significant writedowns of the Merrill Lynch assets. The Federal Reserve, though part of the announced program, did not extend any credit to BofA and their emergency liquidity (loss protection) was withdrawn in May 2009. The Treasury Department and the FDIC were ultimately the providers of support (much of it through the Troubled Asset Relief Program). The Federal Reserve received a $57 million payment in order to end its portion of the deal.

Citigroup[34] – November 23, 2008 – December 23, 2009

Similar to the Bank of America support described above, this support was a joint program of the Treasury Department, FDIC, and Federal Reserve to backstop a specific $306 billion pool of assets. Like the above program, the Federal Reserve did not extend any credit under the arrangement, and the program was ultimately terminated a year after announcement, with a $50 termination fee going to the Fed.[35]

[1] John Cassidy, "Interview with John Cochrane," Rational Irrationality, *The New Yorker*, January 13, 2010, http://www.newyorker.com/online/blogs/johncassidy/2010/01/interview-with-john-cochrane.html.