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RESPONDING to the GLOBAL FINANCIAL CRISIS What We Did and Why We Did It

Nonbank Financial Institutions: New Vulnerabilities and Old Tools

Scott G. Alvarez and William Dudley¹

Note: The views expressed in this draft are strictly those of the author(s).

¹ Scott G. Alvarez was the Federal Reserve Board's General Counsel during the financial crisis; William Dudley served as System Open Market Account Manager to the FOMC and Head of the Markets Group at the Federal Reserve Bank of New York. The authors thank Tom Baxter, Sarah Dahlgren, and Jim Millstein for providing critical insights and comments.



Introduction: Weighing the Economic Risks

By the mid-2000s, nonbank financial firms had become a critical and integral part of the financial system in the United States. Some of these firms matched the largest banking organizations in importance and interconnectedness in the intermediation and funding markets. As a result, the failure of a large nonbank firm could potentially pose the same threat to the stability of the financial system as the failure of a large banking organization.

Yet, the tools available to the Treasury, the FDIC and the Federal Reserve—the agencies charged with acting as first-responders in a financial crisis—to mitigate the effects of the failure of a large and systemically integrated nonbank firm were fewer and more circumscribed than those for addressing the failure of a systemically important bank. Thus, the challenges already inherent in any government attempt to arrest a developing financial crisis were more intense than when dealing with a crisis involving only depository institutions.

This chapter explains why nonbank financial firms were among the largest sources of stress during the 2008 crisis, and describes the challenges that the first-responders faced, given the tools they had, in dealing with the systemic threats posed by the failures of those firms. We do not recount the full sequence of events leading up to lending to some of these firms, but instead focus on a few critical economic questions that the Fed had to grapple with when deciding whether to lend by using its emergency authorities.

Specifically, would a failure likely cause material harm to the economy, would broad-based lending facilities cushion the impact and would lending actually prevent failure?

We view the efforts to prevent the failures of major nonbank financial firms to be only part of the broader set of responses to deal with the collapse of funding and intermediation in the sizable nonbank financial system. That broader program included the Fed liquidity facilities TSLF (Term Securities Lending Facility) and PDCF (Primary Dealer Credit Facility), conservatorship of Fannie Mae and Freddie Mac, the government-sponsored enterprises (GSEs) and guarantees for money market mutual funds. And it also encompassed efforts to support the ABCP (asset-backed commercial paper) and CP markets through the AMLF (Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility) and CPFF (Commercial Paper Funding Facility), and securitizations through TALF (Term Asset-Backed Securities Loan Facility) and PPIP (Public Private Investment Partnership).

I. Setting the Stage

The vulnerabilities of nonbank financial institutions contributed significantly to the severity and breadth of the financial crisis. In the decades before the crisis, the relative share of credit from banks fell and the share of a range of different types of nonbank institutions rose substantially. Investment banks grew in size and importance, as did many finance companies, funded primarily in the short-term wholesale funding markets.

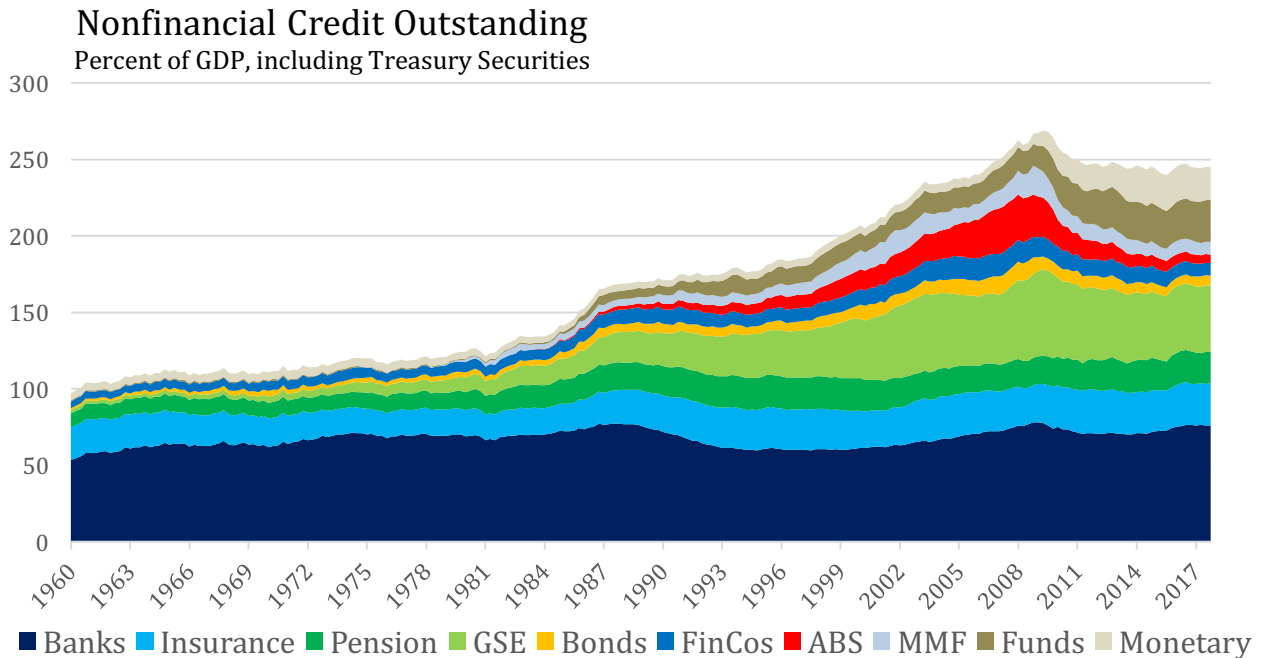
Alongside the growing importance of these types of firms was a significant increase in securitization, as well as a dramatic expansion in the derivatives markets, which enabled financial firms and corporations to manage their risks in new ways. The diversity of financial institutions and financial instruments and the rise of new sources of financing for households and businesses brought significant economic benefits, but also new risks.

The relative stability of the U.S. financial system in the decades before the crisis helped to mask these risks and to bolster the perception that these changes had made the financial system more stable. However, once the U.S. housing bubble burst, the fragility of the system became evident.

Growth of Nonbank Financial Firms

The significance of nonbank financial institutions at the onset of the crisis can be illustrated by the sharp rise in credit they provided to households, businesses and government. Credit outstanding to the nonfinancial sector as a percent of GDP had risen to more than 250 percent at the peak of the crisis, and most of that growth took place outside of depository institutions (**Figure 1**). Credit from broker-dealers, finance companies and asset-backed securitizations was 72 percent of GDP in 2008, up from 15 percent in the mid-1980s, and about equal to the amount of credit provided by traditional deposit-taking institutions. Fannie Mae and Freddie Mac had also expanded rapidly by securitizing mortgages with an implicit government credit guarantee and by purchasing other securitizations for their own portfolios.

Figure 1



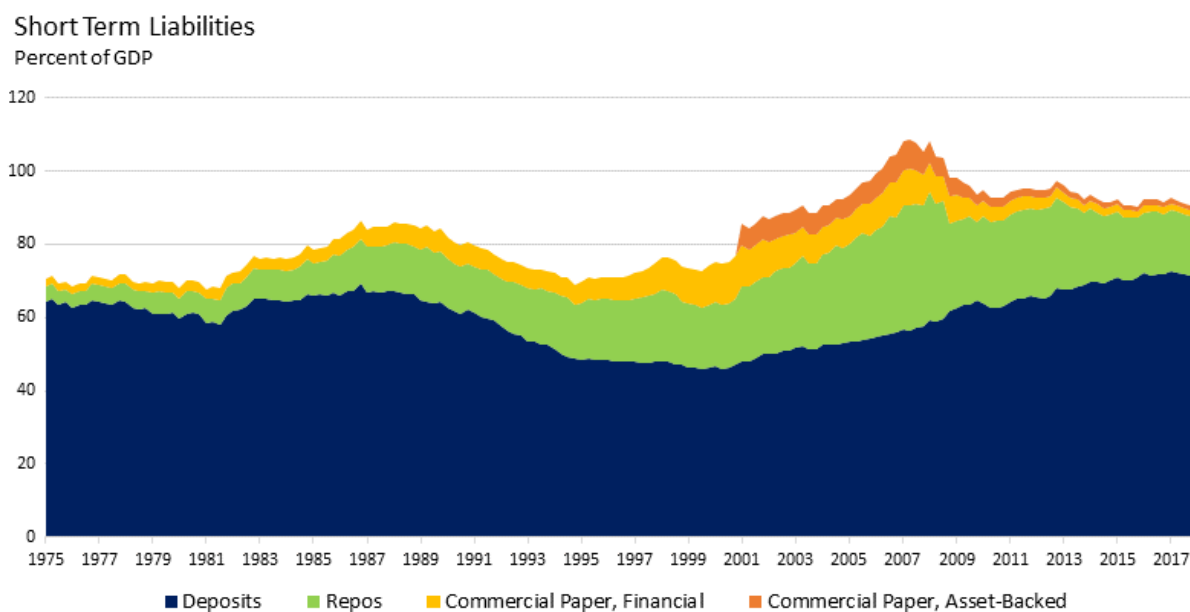
Source: Federal Reserve Financial Accounts of the U.S.

Two key developments led to nonbanks competing effectively with banks.

One development involved innovations in securitizations that allowed nonbanks to provide a broader array of credit. Residential mortgages, commercial mortgages and auto and credit card loans could be bundled and sold as securitized products. Initially, these securitizations were relatively simple and offered a way to redistribute risk. For example, mortgages originated by banks and nonbanks were bundled into mortgage-backed securities, with the securities holder receiving the cash flows from the underlying mortgages. Later, this evolved into a much more complicated system of structured finance. For example, the cash flows from bundles of relatively risky assets such as subprime mortgages were allocated preferentially first to higher-rated (i.e., AAA-rated) securities tranches versus lower-rated tranches in collateralized debt obligations (CDOs). These CDOs could, in turn, serve as the underlying assets in more complex CDOs, still supported by cash flows of the subprime mortgages and other lower-quality financial assets.

A second development, the deepening of the U.S. money markets, also supported the rapid growth of credit from nonbanks. Interest rate ceilings that limited the rates that commercial banks could pay depositors contributed to the emergence of money market mutual funds (MMMFs) in the late 1970s and early 1980s. A large repo market developed that enabled securities firms to fund their portfolios on a short-term basis (mostly overnight) with MMMFs and other short-term investors, and the development of the commercial paper market allowed nonbank finance companies to fund loan originations. Repo and commercial paper—“runnable liabilities”—grew much more rapidly than deposits at traditional depository institutions in the early 2000s, and peaked in 2007 to 2008, before investors pulled back sharply when concerns about collateral and counterparties rose (**Figure 2**).

Figure 2



Source: Federal Reserve Board, Z.1 Financial Accounts of the U.S.

But the reliance on short-term wholesale funding by nonbanks turned out to be a significant vulnerability in the financial system because such funding—unlike bank deposits that were guaranteed by deposit insurance—was very fragile. Although those who lent to securities firms were generally well-secured by the repo collateral that secured such lending, during times of stress the lenders took little comfort from this because they often had no capability or appetite to take possession of the collateral and liquidate it should their counterparty fail. Instead, they pulled back from the repo market when there was a risk that a securities firm might fail. Investors in commercial paper also expect repayment of principal on demand, and generally would pull back quickly on any signs of issuer weakness.

Securities firms with these more vulnerable business models also got bigger. As securitization grew in scale, breadth, and complexity, fixed-income trading activity increased significantly. Soon securities firms were making markets on a global basis (and holding inventory) in sovereigns, corporates and mortgages, and in products securitized from these underlying assets, and offering a suite of derivative products to help their customers manage interest rate, currency and credit risks.

Growth of securities firms also was facilitated by deregulation in the U.S. and abroad, with the U.K.'s “Big Bang” an important milestone facilitating the consolidation and rapid expansion of the securities industry in London. To support this global expansion, the major U.S. investment banks needed more capital, and they converted from private partnerships to public corporations. As public corporations, these firms had permanent capital and could use their retained earnings to fund their global expansion.

As investment banks were expanding rapidly, the largest U.S. commercial banks entered the securities business. Commercial banks initially gained a toehold in the business using Section 20 of the Glass Steagall Act, which allowed commercial banks to have affiliates as long as these affiliates were not “principally engaged” in the underwriting and distribution of securities. This provision effectively eroded the separation of investment banking from commercial banking, long ahead of the repeal of Glass Steagall by the Gramm-Leach-Bliley Act in 1999. The impetus for the expansion by commercial bank-holding companies into the securities industry was both offensive—to expand into what were rapidly growing businesses—and defensive—to follow corporate clients who were increasingly raising funds directly from the capital markets rather than by borrowing from the banks.

This change was significant. Earlier, commercial banks had viewed securities firms mainly as customers. Now they saw them as rivals who were competing aggressively for their corporate business.

As intermediation activity shifted from banks to securities firms, leverage (assets divided by book equity) in the financial sector increased. Because securities firms were allowed to operate without the leverage requirements that applied to banks, they were able to operate with higher leverage than the banks during the stable economic and financial environment that prevailed before the crisis. Higher leverage was justified, in part because the firms tended to hold securities that were more liquid than loans and were marked to market. Leverage at broker-dealers had risen to 45 in 2008 from 28 in

2001, while leverage at large commercial banks was roughly 8 to 9 times during that period (Adrian, et al 2017).²

At the same time, the financial intermediation process grew more complex. Rather than banks simply taking deposits and lending these deposits to households and businesses, the intermediation chains often became much longer and intricate. For example, instead of a savings and loan association making a mortgage and funding it with insured deposits, a bank or mortgage broker might originate a mortgage and sell it to be securitized by Fannie Mae or Freddie Mac, or to a private-label securitization. The securitization then might be purchased by a structured investment vehicle, funded by asset-backed commercial paper held by a money market mutual fund. Similarly, the prepayment risk embedded in the underlying mortgage, rather than being borne by the savings and loan, would be borne by the mortgage-backed security investor and might be hedged with interest rate swaps and/or options.³

One indication of greater complexity and interconnectedness is that while total credit to the nonfinancial sector grew quickly, total debt of the financial sector grew even faster. In the early 1980s, total debt of the nonfinancial sector was about six times as large as debt of the financial sector. By 2008, that ratio had fallen to two.⁴ Also, the amount of financial derivatives contracts outstanding soared. For example, the total notional value of OTC interest rate swap obligations had risen to more than \$300 trillion by 2008, just 27 years after the first swap transaction in 1981, and credit derivatives had risen to about \$60 trillion in 2008 from near zero in the early 2000s.⁵

Regulatory Framework

During this transformation of the financial system, prudential regulation and supervision did not keep pace with the rapid structural changes.

Commercial banks had been operating with a well-developed prudential regime of minimum capital requirements and other constraints focused on preventing bank failures and maintaining the safety and soundness of the commercial banking industry—in essence, this was the quid pro quo for the government insurance provided for retail deposits and access to the Fed’s discount window lending facility.

In contrast, the emphasis for securities firms had been on protecting customers from activities such as fraudulent sales and insider trading. Consequently, regulation and

² Adrian, Tobias, Michael Fleming, Or Shachar, Erik Vogt (2017), “Market Liquidity after the Crisis,” Annual Review of Financial Economics, 9,1, 43-83. Changes in the net capital rule in 2004 also contributed to the increase in leverage.

³ Commercial banks remained closely connected to much of the new business activity. Securities firms, Fannie Mae and Freddie Mac, and hedge funds were all major counterparties. Moreover, many of the new financial structures that were developed to hold securitized instruments, such as structured investment vehicles, were supported by backstop lines of credit from commercial banks.

⁴ Calculated from the Federal Reserve’s flow of funds statistics.

⁵ BIS derivative statistics at <https://www.bis.org/statistics/derstats.htm?m=6|32|71>.

supervision of nonbank financial firms was largely focused on investor protection through adequate disclosure of financial and investment information, rules against fraudulent behavior and the establishment of minimum qualifications for brokers and others in their dealings with customers. When securities firms became troubled, the goal was to ensure that the firm's investments could be segregated from those of its customers and returned to the customer if the firm were to fail and had to be liquidated; the focus was not on the consequences of failure in terms of contagion to other firms. When major securities firms had failed in the past (e.g., Drexel Burnham in 1990), there typically wasn't much systemic consequence.

Moreover, supervisory and regulatory authority over the U.S. financial system was divided among a host of different federal and state regulators, with the particular charter of the institution determining the appropriate regulator. This arrangement created an opportunity for firms to find less stringent regulation by the choice of charter under which they would operate their business. The result allowed situations such as the Office of Thrift Supervision having responsibility for AIG's Financial Products Group, which was engaged in selling credit default swap protection against complex CDOs and interest rate and foreign exchange swaps.

In the same vein, there was no well-established lender of last resort apparatus to support non-depository institutions. While commercial banks could borrow from the Federal Reserve through the discount window or from the Federal Home Loan Banks against mortgage collateral as a normal course of business, securities firms and other nonbank financial entities did not have such a backstop.

The central bank's powers to lend to such firms, or to provide broad-based backstops to particular financial markets and products, was generally limited to the authority contained in Section 13(3) of the Federal Reserve Act (FRA), with lending against Treasury, agency and agency mortgage-backed securities (MBS) collateral a notable exception. Under Section 13(3), the central bank could provide credit only under unusual and exigent circumstances when access to credit was judged as being unavailable elsewhere (see paper on Legal Authorities for more detail). The statutory hurdle to using the Section 13(3) authority was very high. Prior to the financial crisis, the Federal Reserve had last used this authority in the Great Depression. Securities firms or other nonbank financial firms could not count on this type of intervention.

As a result, on the eve of the crisis many vulnerabilities of the financial system were not well understood by regulators or market participants. Moreover, there was no effective means for preventing the failure of a large nonbank firm or resolving the failure of such a firm expeditiously and in a way that avoided contagion.

II. Official Responses to Distressed Nonbank Financial Firms

Increasing Stresses on Nonbank Firms and the Initial Responses

As house prices began falling in 2006, specialized mortgage lenders were the first firms to come under stress. Most of these lenders were independent and not affiliated with a bank, and they needed to borrow short-term funds to operate. But many lost access to funding and failed as house prices fell and mortgage delinquencies began to climb. More than 70 mortgage lenders, including notable firms like New Century and American Home, failed in the first three quarters of 2007 as disruptions hit the ABCP market—more than a year before Fannie and Freddie were put into conservatorship and Lehman failed. Securities firms also were facing increasing losses from the effects of falling house prices as the value of private-label mortgage-backed securities declined and funding costs rose.

The Fed was concerned about the effects of a housing correction and financial firm weaknesses on the economy, and encouraged depository institutions to make greater use of the discount window, first by cutting the primary credit rate and extending loan maturities, and in December by creating the Term Auction Facility (TAF) to reduce stigma (see paper on Legal Authorities). However, TAF could provide liquidity directly only to depository institutions, which meant this lender of last resort tool could not reach nonbank mortgage lenders, securities broker-dealers, insurance companies and other nonbank financial firms. Moreover, statutory limits (Section 23A of the FRA) on the ability of a depository institution to provide funding to its nonbank parent and affiliates meant that the discount window was not a viable tool to support the nonbank parts of banking organizations, including such large ones as Citigroup and Bank of America.⁶

The authorities also encouraged weaker firms to raise private capital to not only shore up their own financial positions in the event of a recession, but to help avert an outcome whereby weak financial institutions were forced to restrict credit, which would then make any recession deeper. At the January 2008 meeting of the Federal Open Market Committee (FOMC), with current data showing GDP growth still positive, Federal Reserve Bank of New York President Timothy F. Geithner (Vice Chairman of the FOMC) expressed concerns about the ability of financial firms to absorb projected credit losses if house prices were to decline 20 percent more. Announced write-downs by the largest financial firms in the second half of 2007 had already reached \$100 billion, with about one-half by nonbank firms. Federal Reserve Chairman Ben Bernanke, in his summary remarks, said,

⁶ Section 23A of the Federal Reserve Act, among other things, generally prohibits a bank from providing funding to a nonbank parent or affiliate (through either extensions of credit or asset purchases) in an amount that exceeds 10 percent of the bank's capital and surplus. This restriction protects a bank—which collects deposits insured by the FDIC and ultimately the taxpayer—by limiting the amount of risk the bank may take from funding its uninsured affiliates. At the time of the financial crisis, the Federal Reserve could provide an exception to this limit, but, as a matter of practice, consulted with the FDIC in each case and generally would not grant an exception over the FDIC's objection. While the Federal Reserve granted several 23A exceptions during the crisis, these generally involved allowing a nonbanking company to transfer to its depository institution affiliate assets that the depository institution could have originated directly; a condition of the exception was that the parent company provide a funded guarantee to the depository institution against losses on the transferred assets.

“like others, I am most concerned about what has been called the adverse feedback loop—the interaction between a slowing economy and the credit markets.”

To raise capital, firms turned to strategic investors or agreed to be acquired. Merrill Lynch raised \$12.8 billion in common equity in two offerings in late 2007 and early 2008, after posting substantial losses in late 2007, and Morgan Stanley raised \$5.6 billion in the fourth quarter of 2007. Banking firms, including Citigroup, Wachovia and Washington Mutual, also raised capital, given substantial reported write-downs. Others were less successful. Countrywide, the largest mortgage lender at the time, averted failure in early 2008 by agreeing to be acquired by BankAmerica for a fraction of its peak market value. Bear Stearns found in the winter of 2007 and spring of 2008 that it was unable to raise sufficient capital to remain independent. In early 2008, the financial system was looking very weak and the prospects had significantly increased that a run on liquidity might further shock the system by precipitating the failure of large financial firms that were thinly capitalized.

Lender of Last Resort Considerations

When private capital was not available, authorities had to determine whether and how to intervene under emergency authorities. The lender of last resort can help mitigate the risk that illiquidity becomes acute and the markets misperceive the underlying solvency problem. But the lender of last resort cannot solve the fundamental problem that capital is too thin to absorb potential losses.

While there was not a rigid or formal process established before the crisis to determine how or when to use various tools, the active consideration of several questions best describes the way in which the Federal Reserve approached deciding whether to use its lender of last resort authority to provide liquidity to nonbank financial firms. First, would the failure of the institution likely cause material damage to the core of the financial system and the overall economy? In addition to the significance of a firm’s role in the funding and credit markets and its linkages with other firms, the potential damage is also a function of the state of the economy at that moment in time. Failure of a large nonbank in a relatively stable world would matter less than the failure of even a more modest sized institution in a very fragile world.

Second, could the broader provision of liquidity to the markets be powerful enough to contain the risk of a broader run in the event of a firm’s failure? If so, then the first instinct should be not to intervene to try to prevent the failure of a specific institution.

Third, could lending prevent failure? The emergency lending authority in the Federal Reserve Act did not require a finding of solvency, and illiquidity itself cannot be disqualifying. But Federal Reserve lending authority was not designed to be used to rescue the nonviable. The emergency provisions require that the Federal Reserve be satisfactorily secured, which limits the amount of risk the Federal Reserve could take and the ability of the Federal Reserve to rescue institutions close to the point of insolvency. If the assets and businesses of the institution had enough value to support a loan large enough to prevent failure, then the Federal Reserve could use its emergency lending authority to prevent that failure. In contrast, if the value of the assets held by the firm

was not sufficient to support a loan large enough to allow it to continue to operate, then the Federal Reserve did not have the ability to act on its own to prevent that failure. In this case, it might be able to use its lending powers to help support the acquisition of a failing firm by a willing acquirer. The point of emergency lending, however, was not simply to fund the exit of creditors without stabilizing the financial system.

These framing questions are a guide for decision-making. However, no plan survives first contact with a crisis, and translating a plan into concrete actions depends on the actual facts, the information available and amount of time available to assess that information, and the tools afforded. Ultimately, actions are determined by what is feasible in the moment.

As described below, consideration of these questions led the Federal Reserve to lend using its emergency authorities to a number of nonbank financial firms during 2008 and 2009.

Securities Firms and Market-Wide Liquidity Facilities

The end for Bear Stearns came quickly when it faced a run on its funding during the week of March 10, 2008. Bear had been unable to raise private capital. On that Monday, Bear Stearns had about \$18 billion in cash reserves. By Thursday night, its cash reserves had fallen to approximately \$2 billion, an amount that the management of Bear Stearns did not believe would be sufficient to allow Bear to survive the next day.

The potential disruption to the financial system from the abrupt failure of Bear Stearns could be avoided if a merger partner could be found quickly. The Treasury, Federal Reserve and SEC immediately set out to help find an able acquirer. JP Morgan was interested and others might be found, but only if Bear Stearns could survive Friday and into the weekend to allow interested bidders to evaluate the firm. The Federal Reserve determined to use its emergency section 13(3) lending authority on Friday morning, March 14, 2008, to provide Bear with funding to bridge to the weekend.

By the end of that weekend, only JPMC, which had extensive dealings with Bear Stearns in the tri-party repo market and knew the businesses of Bear well, was interested in acquiring the firm. But JPMC determined that it was unwilling to go forward unless the Federal Reserve Bank of New York was willing to assume the risk in lending against a pool of about \$30 billion of the nearly \$400 billion in assets held by Bear. At that point, the Federal Reserve made a second decision to provide liquidity to assist the acquisition by providing funding for a portfolio of Bear's assets.

These two decisions were not easy and certainly would not be free from second-guessing. Leading up to both decisions, there was significant debate inside both the Federal Reserve and Treasury regarding whether the Federal Reserve should provide emergency credit. The discussions included long multi-agency phone calls on the night before and morning of the Friday credit as well as numerous calls and meetings before the second loan facilitating the acquisition.

On the one hand, Bear was the smallest of the major investment banks and significantly smaller than the large banking organizations, and it might be possible to mitigate the effect on other firms and markets of a failure of Bear. Indeed, before the failure of Bear Stearns, the Federal Reserve had announced its decision to open a broad-based facility called the Term Securities Lending Facility (TSLF), which might limit the effect of the failure of Bear on other firms like it by allowing primary dealers to improve their access to liquidity by swapping a variety of illiquid assets for US Treasury securities. And, while it was working on finding a buyer for Bear Stearns, the Federal Reserve was developing a second liquidity facility—the Primary Dealer Credit Facility (PDCF)—to provide additional liquidity to primary dealers and that it announced on Monday, March 17, 2008.

Moreover, it was not clear that the Fed’s lending authority alone would be enough to save Bear. The market had lost confidence in Bear’s ability to meet its obligations, its core businesses were bleeding away and the value of its financial assets was declining rapidly. It was far from clear that Fed lending to Bear—the only emergency tool available to the government at the time—would stabilize the firm; instead, it could simply have facilitated the quick exit of creditors and counterparties.

On the other hand, the failure of Bear Stearns during the business day on Friday (which its own management feared) or the failure to avoid its collapse on Monday would likely be highly disruptive to markets and, even with the Federal Reserve’s facilities, could set off a panic at the other large broker-dealers that could inflict wide-ranging damage because of the critical role these firms had come to play in the financial system. Bear Stearns was very large and integrated into the financial system and the weaknesses at Bear were emblematic of the vulnerabilities at the other major investment banks. Like the other investment banks, Bear Stearns was highly leveraged and depended heavily on short-term funding from the tri-party repo market. In the triparty repo market, lenders had an incentive to run at the first sign of trouble to avoid the risk that they would have to take possession of and liquidate the collateral that backstopped their triparty repo loans. If Bear’s failure were to cause funds from money markets to pull back from funding the other investment banks as well, that could precipitate additional forced sales of similar mortgage securities. Fire sales at a time when financial markets were already on edge from the ongoing housing correction could lead to a downward spiral of asset prices and further losses for these firms, and cause severe damage to the functioning of the financial system and the economy.

Federal Reserve lending could also calm markets and reduce further damage to the economy by showing that the Federal Reserve and Treasury were willing to use their emergency powers. While using these emergency powers might suggest that the government believed that the economy and the financial system were more fragile than the public believed and that the government had the ability to prevent disruptive failures, waiting too long to invoke emergency powers—or not using them at all—could suggest that the Federal Reserve and Treasury were either asleep at the switch or simply willing to watch as Rome burned. And there was the prospect that Bear could be acquired and substantial equity injected into the firm, something the government could not otherwise do.

The history of panics demonstrates that the balance must tilt in favor of acting because inaction can prolong and exacerbate the real consequences for consumers, businesses and future economic growth from shocks that tear at the weaknesses in the system.⁷

The request for emergency credit to help finance the acquisition of Bear Stearns by JPMC raised an additional question for the Federal Reserve: would it be possible and appropriate for the Federal Reserve to use its emergency authority to help fund a particular asset pool as a way of facilitating the acquisition of Bear Stearns by JPMC?

The Federal Reserve's lending authority was shaped by the principles of Bagehot—lend freely to solvent firms against good collateral at penalty rates when this was needed to save the financial system. During the Great Depression that meant making secured loans to a borrower that typically had business operations. The credit that facilitated JPMC's acquisition of Bear Stearns—while meeting the statutory requirements for emergency lending to a nonbanking firm—was asset-based lending that depended on the value of financial assets that were pledged as collateral to secure the loan, with JPMC providing subordinated debt that would absorb the first \$1.15 billion in losses, if any, on the sale of the collateral.

While this type of lending is common in the banking industry, it was new to the Federal Reserve and would expose the Federal Reserve to fluctuations in the value of the underlying collateral during a financial crisis without the protection of general recourse to JPMC.⁸ Nonetheless, as the central bank, the Federal Reserve could be patient and allow the value of the assets backing the loan to recover as the financial crisis abated, thereby both enhancing the chances for repayment of the loan and avoiding the adverse effects on the economy that would accompany fire-sales of these assets during the crisis. There would still be risk that the value of the assets would not recover and the loan would not be fully repaid. However, that risk appeared small and the risk to the economy, which was fragile at the time, from the failure of Bear appeared likely to be significant.

Concern about this risk of loss to the Federal Reserve led the Chairman of the Federal Reserve and the President of the FRBNY, though not legally required, to request that Treasury provide protection against that potential loss before making the final decision to extend emergency credit to facilitate the acquisition of Bear Stearns by JPMC. The Treasury did not believe that it had authority to backstop the Federal Reserve against loss or to provide funds to support the emergency credit or facilitate the acquisition of Bear Stearns. However, the Secretary provided the Federal Reserve with a letter that both

⁷ For example, Reinhart and Rogoff (2014) document severe recessions and weak recoveries from financial crises. Based on 63 episodes in advanced economies, average GDP per capita losses are almost 10 percent from peak to trough, with a downturn lasting 3 years, and a recovery of output to pre-crisis levels taking 8 years. Reinhart, Carmen M., and Kenneth S. Rogoff. "Recovery from financial crises: Evidence from 100 episodes." *American Economic Review* 104.5 (2014): 50-55.

⁸ To facilitate this credit, the Federal Reserve made its first use of a special purpose vehicle to hold and account for the portfolio of collateral. It provided the Fed more control over the sale of the assets and greater transparency to the public. The SPV was valuable to JPMC because the capital charge associated with holding those assets would have absorbed some of its cushion remaining on both its risk weighted and total capital ratios. About two-thirds of the portfolio that was considered relatively low risk to the Federal Reserve were securities with underlying risk backed by Fannie and Freddie that would have counted against JPMC's total (non-risk weighted) capital ratio.

expressed support for the decision to use extraordinary lending authority and recognized the potential risks of loss on the loan. The Fed and Treasury believed that after nine months of a crisis which had inflicted liquidity problems and losses on financial institutions throughout the U.S. and Europe, a Bear bankruptcy would be a severe shock to the system and could precipitate the failures of other fragile securities firms.

After the collapse and acquisition of Bear Stearns, market confidence in all of the large investment banks eroded further. It became more difficult for investors to assess the scale of actual and expected losses of these firms and how much the failure of one firm would raise the probability of the failure of the others as the probability of a recession was increasing. Consequently, lenders pulled back from Lehman, Goldman Sachs, Merrill and Morgan Stanley, among others.

An astounding aspect of the run on Bear Stearns was that short-term creditors had been refusing to provide funding to Bear even when collateralized by Treasury securities. This stemmed from concerns that if Bear Stearns failed, the repo counterparties would have to assume and liquidate the collateral. The Federal Reserve established the PDCF to provide backup liquidity to the investment banks in the event that they experienced a situation similar to Bear's. The PDCF enabled the Fed to lend to primary dealers against most of the types of collateral that were used in the triparty repo market. The PDCF helped support the triparty repo market by assuring investors that there would be a backstop source of liquidity available to the primary dealers.

Even with the Fed's PDCF and TSLF programs in place, the fragility of the financial system continued to intensify, which confirmed the judgment of policymakers that intervening to help prevent the abrupt failure of Bear was justified. Lehman Brothers was widely viewed as the next securities firm most vulnerable to the housing downturn and impending recession. The Treasury, Federal Reserve, and SEC strongly urged Lehman to raise significant capital and liquidity. A condition of access to the PDCF was that the borrowing firms provide the Federal Reserve regular information about their financial condition, providing a window into these firms that was not previously open to the Federal Reserve.

Lehman presented challenges that were similar to Bear, but magnified in several respects. It was larger and widely perceived to have substantially greater embedded losses than Bear Stearns, suggesting negative spillovers from its failure would be even greater. A stress test conducted jointly by the Federal Reserve and SEC in June 2008 showed Lehman did not have sufficient liquidity or capital to survive even a milder version of the stresses experienced by Bear Stearns. Moreover, the risks of a deep recession and a more severe crisis had continued to increase through the summer. The market seemed to agree with this assessment: five-year CDS premiums for Lehman rose through the summer, and were higher than those for Merrill Lynch, Morgan Stanley, and Goldman Sachs, and all of the large commercial banks.

Lehman's position was especially perilous in part because in its attempts to raise capital, it had opened its books to a broad universe of potential investors and partners in a process that did not increase confidence. It was viewed to have some unattractive businesses relative to its competitors. By September 2008, Lehman had raised only \$6 billion in additional capital (while announcing nearly \$3 billion in losses during the same

period). It also had raised about \$20 billion in additional liquidity, but much of that was immediately encumbered as collateral for existing obligations. These meager efforts left Lehman vulnerable. Its plan to spin off \$30 billion of its most risky assets into a separate company, leaving a “clean Lehman,” failed because the market was unwilling to acquire the assets at what Lehman perceived their value to be.⁹

There was some hope that placing the GSEs into conservatorship—thereby putting the U.S. government squarely behind the guarantees made by the GSEs against losses on many mortgages—would have the collateral benefit of relieving some funding pressures for Lehman. However, when Lehman’s effort to obtain capital from the Korean Development Bank failed the day after the GSE conservatorship was announced, a run on Lehman began.

Going into the weekend of September 12, Lehman, Merrill Lynch and AIG were all at the edge of failure. The Treasury, Federal Reserve and SEC convened a consortium of the world’s major financial firms with the hope—and direction—to find a private sector solution to Lehman. The agencies facilitated the efforts of potential acquirers to review Lehman’s books and made the case to the entire consortium that it was in their best interest to fund a special purpose vehicle that would take Lehman’s unwanted assets either to facilitate the acquisition of Lehman or otherwise prevent its disorderly failure. The agencies also closely monitored—and encouraged—efforts by various investors and lenders to arrange a solution for AIG, and pushed management of Merrill Lynch to find a partner quickly.

Over the course of the weekend, it became even more clear that Lehman had been overvaluing its assets and the economic risk in Lehman's pool of assets was substantial. Moreover, the financial institutions that were most likely to find value in Lehman’s businesses did not believe that those businesses had sufficient value relative to the significant risks and certain investors had begun to go public with their concerns. After this initial review, only two firms showed serious interest in acquiring Lehman—Bank of America and Barclays. BoA’s rough estimate, based on data from Lehman itself, was that Lehman had \$60 billion to \$70 billion of assets marked well above what they were likely to be worth. Barclays also estimated that at least \$50 billion of Lehman’s real estate and private equity assets were significantly overvalued.¹⁰ While these surely were opening bids in a negotiation, they indicated the depth of Lehman's losses and the relative weaknesses of its businesses.

By Saturday afternoon, BoA had decided Lehman’s capital hole was too deep and that it was more fragile and less valuable than Merrill. Barclays was then left as the only potential buyer, but on the condition that it could leave behind a substantial pool of the riskiest assets, which the private consortium had tentatively agreed to fund.

⁹ Randall Smith, “Lehman's Revamp Plan Draws Doubters,” *The Wall Street Journal*. September 11, 2008. <https://www.wsj.com/articles/SB122103219388318869?mod=searchresults&page=1&pos=6>.

¹⁰ Paulson, 199, 206. Andrew Ross Sorkin, *Too Big to Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System—and Themselves* (New York: Viking, 2009), 300, 319, 336, 340. David Wessel, *In Fed We Trust: Ben Bernanke's War on the Great Panic* (New York: Random House, 2009), 13, 17-19.

While this felt like the makings of a solution, it was not. With every deal, there is a period of delay between announcement and consummation, and with that delay comes uncertainty that unexpected subsequent events will prevent the deal from actually being completed. In the case of Bear Stearns, that uncertainty was eliminated by JPMC providing a guarantee of the obligations of Bear Stearns during the negotiation period. A similar guarantee would be needed were Barclays to acquire Lehman.

The British regulators refused to waive a London Stock Exchange requirement that Barclays' shareholders approve an open-ended guarantee of Lehman's trading book during the pre-closing period. That would leave a dangerous period of 30 to 60 days of delay and uncertainty. Barclays asked whether the Federal Reserve would provide a full guarantee of Lehman's trading book during this period.

The Federal Reserve considered it, but determined that it did not have the legal ability to provide an open-ended guarantee—that is, an unlimited loan for an indefinite period without reasonable certainty that sufficient collateral or a merger partner would be available to ensure repayment.¹¹ Although the British authorities did not say it explicitly at the time, they made it clear in accounts written after the crisis that at the time they deemed Lehman too close to insolvency to risk burdening an already weak Barclays. They interpreted the indications that the Federal Reserve could not provide a guarantee as further indication that Lehman was too weak.¹²

It became increasingly clear that the market did not believe Lehman was viable. Without a willing buyer, without access to a resolution regime like the FDIC's for banks, and without capital to inject into the firm, there were no more options to prevent Lehman's failure and bankruptcy. The difficult question was not whether the failure of Lehman would seriously shock the economy—that seemed likely.

The difficult question for the Federal Reserve was whether it could lend sufficiently and in a way that would prevent the disorderly failure of Lehman and the shocks that would accompany that failure. The judgment of the Federal Reserve was that the combination of the fragility of Lehman's businesses and the scale of losses in its assets meant that the Federal Reserve could not provide Lehman with a loan large enough to save it. The Federal Reserve believed that lending into the ongoing run would just finance the exit of other creditors, fail to arrest the collapse in confidence in the institution, and erode the ultimate value left for the rest of the creditors, all without improving the odds that Lehman would survive or a viable buyer would emerge.

Would a loan to buy time have been helpful in limiting the damage, even if it simply delayed rather than prevented failure? Not at all clear at the time. To lend ineffectively, without stabilizing the firm and credibly preventing failure, would not have been reassuring to a market at the edge of panic.¹³ The Federal Reserve did lend to the

¹¹ See Thomas C. Baxter, Jr. Statement before the Financial Crisis Inquiry Commission, September 1, 2010. http://fcic-static.law.stanford.edu/cdn_media/fcic-testimony/2010-0901-Baxter.pdf

¹² Paulson, 209.

¹³ In responding to the Financial Crisis Inquiry Commission, Chairman Bernanke expounded on this reasoning—"the credit relied on by Lehman to remain in operation was in the hundreds of billions of dollars and the lack of confidence that led counterparties to pull away from Lehman suggested that

Lehman broker-dealer, which would go through a Securities Investor Protection Corporation (SIPC) proceeding and was not included in the Lehman holding company bankruptcy filing, against collateral in the broker-dealer (which represented less than 50 percent of Lehman's assets) in order to help limit some of the damage from a rapid liquidation and bridge the broker dealer to an acquisition by Barclays.¹⁴ But the Federal Reserve did not believe that Lehman's assets or businesses would provide security for a loan large enough to convince the markets that the Lehman conglomerate was viable.

After Lehman declared bankruptcy and Merrill Lynch announced it would be acquired by Bank of America, the pressure switched focus to the remaining two large independent investment banks—Goldman Sachs and Morgan Stanley. That Sunday evening, the Fed expanded the PDCF to accept any type of security that could have been used in the tri-party repo market, including collateral located overseas, to provide a fuller backstop for funding for the remaining investment banks. Confidence eroded in Goldman and Morgan Stanley even after the PDCF was expanded. Both investment banks began to urgently seek strategic investors with strong balance sheets, and the Bush Administration went to Congress to request emergency authorities to stabilize the financial system and prevent future disruptive failures.

Following the model of the JPMC-Bear Stearns merger, the agencies pushed both Goldman Sachs and Morgan Stanley to consider combining with commercial banking firms. Neither firm found the prospect of merging with a commercial bank to be attractive. No well capitalized bank seemed to be interested. And combining one of these investment banks with a weak banking organization, such as Wachovia, might not have forestalled the failure of the combined firm.

Instead, the Federal Reserve Bank of New York returned to an idea that had been rejected earlier in the summer: encourage both firms to become bank holding companies. For the firms to gain the designation of a bank holding company, the Federal Reserve was required to find that they had sufficient financial and managerial resources to meet regulatory and supervisory requirements and to safely and soundly continue operations. An essential element of this strategy was obtaining capital from an outside investor because a meaningful capital injection would provide a private sector endorsement of the firm's financial health and new business plan. This strategy could be helpful if it demonstrated to markets that both firms were positioned to survive, with greater

Lehman would need a credit backstop of all its obligations in order to prevent a debilitating run by its counterparties. Moreover, the value of a substantial portion of assets held by Lehman, especially its investments in RMBS, loans, and real estate, was falling significantly. Derivative positions were subject to continuing collateral calls that required amounts of Lehman funding that could not easily be quantified in advance. And clearing parties were demanding collateral as a condition for serving as an intermediary in transactions with Lehman. We saw no evidence that Lehman had sufficient collateral to support these types and amounts of taxpayer support from the Federal Reserve [...] Moreover, without a potential buyer for Lehman, the Federal Reserve could not be certain how long it would be required to fund Lehman or what the ultimate source of repayment, if any, would have been." Ben Bernanke, Testimony: Financial Crisis Inquiry Commission 2010, 11-12. http://fcic-static.law.stanford.edu/cdn_media/fcic-testimony/TBTF/Chairman%20Bernanke%20Follow%20Up.pdf

¹⁴ We coordinated with the SEC to have the Lehman broker-dealer continue to operate with funding from the Fed while it wound down its book, since, at a smaller size, a SIPC proceeding would be more orderly in the event an acquisition was not finalized.

reliance on their insured bank and under the same prudential supervisory regime that applied to a large commercial banking organization. To facilitate the migration of these firms to a business strategy more like a commercial banking organization, the Federal Reserve could also grant both firms an exception from the limitations in section 23A of the Federal Reserve Act to allow the firms to transfer bankable assets into their respective insured banks.

Both firms were approved to become federally regulated bank holding companies, on the condition they raise equity, which both firms were successful in doing. Goldman Sachs secured a commitment for a \$5 billion equity investment from Warren Buffett and raised another \$5 billion through a public offering. Morgan Stanley secured a commitment of about \$9 billion of new equity from a large Japanese banking conglomerate, Mitsubishi Financial.

The combination of the equity injections and the BHC designation provided some modest relief. However, becoming a bank holding company did not give either firm material additional access to emergency funding. While both firms already owned insured depository institutions that had direct access to the Federal Reserve's discount window before becoming bank holding companies, these banks were limited by law in the amount of funding they could pass on to their nonbank parent and affiliates (in particular their securities broker-dealers, which were very large before the conversion to BHCs and would remain so after the conversion). Ultimately, it took capital from the Troubled Asset Relief Program (TARP), which gave the Treasury the ability to purchase assets and equity from financial institutions, and guarantees of new borrowing by the holding companies from the FDIC to provide a measure of stability for both firms.

AIG

At the end of 2007, AIG was the largest insurance conglomerate in the United States, with more than \$1 trillion in total assets. Its businesses included large life insurance companies and large property and casualty insurance companies with operations in more than 130 countries; one of the largest airplane leasing companies in the world; a large securities lender (securities lending outstanding of \$88.4 billion in 2007:Q3); and a derivatives operation that provided massive credit default swap protection to banking organizations all over the world (credit defaults swaps with notional value of \$527 billion at the end of 2007).¹⁵ While portions of the company were subject to supervision and regulation by various state insurance commissioners and foreign regulators, large portions of the firm were not subject to regulation and the regulatory framework for the consolidated supervision of a firm of this size or complexity was totally inadequate.¹⁶

¹⁵ McDonald, Robert and Anna Paulson (2015).

¹⁶ While the Office of Thrift Supervision was nominally charged with supervising AIG because AIG owned a small savings association, the regulatory and supervisory framework established by the Savings and Loan Holding Company Act focused the OTS on ensuring that the firm had sufficient resources to operate the savings association, which was a small part of the conglomerate, and not on ensuring that the conglomerate would itself operate subject to prudential standards adequate to ensure the viability of the entire conglomerate.

AIG controlled several profitable and viable insurance companies and had a high credit rating. Nonetheless, it was facing increasingly severe liquidity pressures going into the weekend before Lehman's failure, was actively seeking new sources of capital and funding, and had quickly become perceived in the markets as close to failure. AIG's sizable securities lending business involved lending assets owned by the insurance companies, with the permission of the state insurance supervisors, and investing the cash collateral obtained into risky, illiquid mortgage-backed securities held outside the insurance companies. Counterparties in this business were refusing to roll over their positions and instead were demanding return of their cash and securities. At the same time, the Financial Products Division of AIG, also outside the regulated insurance companies, was experiencing increasing demands for cash and collateral to support the credit protection it had sold. The regulated AIG insurance companies could not provide funding to these activities without the agreement of the appropriate state insurance supervisor, whose charge was to protect the viability of the insurance company and its policyholders. While the New York State Insurance Superintendent allowed certain of the insurance subsidiaries to provide about \$20 billion to help AIG meet its margin calls, that amount was not nearly enough to satisfy AIG's needs.

Leading into the weekend of September 14, the Federal Reserve believed that a disorderly failure of AIG would pose material risks to other financial firms and the economy, by leading to further forced sales of mortgage securities and substantial loss of credit protection that had been purchased by financial firms, especially in a financial system reeling from revealed fragilities of the GSEs and Lehman. As with the investment banks, the authorities pushed for a private sector solution to AIG. Indeed, a number of banking firms and investors were reviewing the financial statements of AIG and considering whether to invest in the firm over the same weekend that firms were considering the purchase of Lehman. But none could get comfortable with the magnitude of the risk or with the company's management, especially after AIG was downgraded after Lehman's failure, so there was no buyer for AIG.

At this point, there were very few options available to address the liquidity problems at AIG in order to reduce disruptions to its many counterparties and policyholders. While each state has a framework for the resolution of an insurance company chartered by that state, there was no framework other than bankruptcy for the resolution of the portions of the AIG conglomerate that were not insurance companies. Accordingly, when the derivatives operations of AIG and the securities lending operations of AIG experienced significant losses and liquidity strains, AIG was faced with the prospect of resolution in bankruptcy. Neither markets nor the public were expecting the failure of AIG, and its bankruptcy would have been by far the largest in U.S. history. Moreover, a bankruptcy proceeding, which is designed to protect the company's creditors and counterparties, would not take account of systemic risks as it worked through the complicated unwinding of derivative and securities lending agreements, and would have created tremendous disruptions to an economy and financial system already in crisis.

Without a private sector solution, the only tool available to prevent the disorderly and unexpected failure of AIG during the days following the failure of Lehman was the emergency authority available to the Federal Reserve to provide credit under section 13(3). For the reasons discussed above, the failure of AIG appeared certain to cause material distress at a time when the economy was perilously weak and struggling under the weight of Lehman's unexpected bankruptcy announcement. It was unclear as yet

which markets might benefit from additional broad-based lending facilities sponsored by the Federal Reserve, and neither the Federal Reserve nor Treasury had authority to provide the capital that the financial system needed to restore confidence.

Fortunately, the Fed believed that AIG's insurance company subsidiaries had substantial value and would enable the company to be viable in the long-term and provided adequate value to collateralize the loan. Also importantly, market participants believed AIG's problems were limited to a liquidity shortfall at the holding company and believed that the value of its insurance companies made the company solvent and viable.

On Tuesday, September 16, 2008, with the support of the Treasury and after discussions with state insurance supervisors about the health of the insurance companies controlled by AIG, the Federal Reserve announced it would provide AIG with a revolving line of credit in an amount of \$85 billion secured by all of AIG's assets, including the shares of its insurance company subsidiaries.¹⁷ This loan was intended to be large enough to meet AIG's projected liquidity needs with a cushion. But even that turned out not to be enough. All told, the Federal Reserve and Treasury needed to provide more than \$180 billion in capital commitments and liquidity funding over time.

As a condition of the loan, the Federal Reserve required a tough set of terms that it believed was appropriate to protect and compensate the taxpayers for the risk associated with making the loan to a failing company. These terms included a penalty interest rate, a requirement to provide substantial convertible preferred stock to a trust for the benefit of the United States, a limited duration on the loan, covenants limiting the acquisitions and activities of AIG, and the replacement of the CEO and ultimately the board. These were similar financial terms to those required by private lenders to a troubled firm. Indeed, the terms of the Federal Reserve credit were modeled on terms prepared for a private sector lender that ultimately decided not to take the risk of lending to AIG after Lehman failed.

Over the next couple of months, it became clear that the financial condition of AIG was worse than the Fed or markets had anticipated. In addition, the credit rating agencies indicated that the initial terms of the emergency credit—in particular, the high interest rate, the size of the credit, the short duration of the credit and the senior position of the Fed—as well as unexpectedly large losses embedded in AIG's derivatives and securities lending portfolios, were leading them to consider a further downgrade of the credit ratings for AIG. Lower ratings would increase the financial stress on AIG by subjecting it to higher collateral requirements and increased liquidity demands from counterparties. Fortunately, in early October, Congress enacted the Emergency Economic Stabilization Act (EESA), which empowered Treasury to inject capital using the TARP. EESA allowed the Federal Reserve and the Treasury to restructure the government assistance to AIG in a way that proved to be necessary to satisfy the credit rating agencies and market participants that were now questioning AIG's solvency.

¹⁷ Excepted from this collateral was shares of **certain foreign subsidiaries and previously encumbered assets**. See https://www.newyorkfed.org/medialibrary/media/aboutthefed/aig/pdf/original_credit_agreement.pdf.

Importantly, the Treasury used TARP funds to provide much needed capital to AIG and reduce its dependence on the Federal Reserve’s revolving line of credit. And, because the Federal Reserve provides credit during emergencies as a way of helping stabilize the financial system and limit disruptions to the economy—not for the purpose of maximizing profits as would a private investor or lender—it was willing to restructure the AIG credit by lowering the interest rate on the credit (still, however, charging a penalty rate). The Federal Reserve also determined to extend additional emergency credit through two new SPVs that alleviated AIG’s critical need for liquidity arising from its securities lending and credit default swap programs. In these transactions, AIG provided funding to the SPVs that was subordinated to the Federal Reserve’s senior credit, and the Federal Reserve had the right to share in any residual value of the pledged collateral, which earned billions of dollars for the taxpayer.

The Federal Reserve and the Treasury restructured their arrangements with AIG several additional times during 2009 to address potential downgrades by the credit rating agencies. The need to continually adjust the structure of support to meet the credit rating agencies criteria was an ongoing challenge for the government and would not have been possible without the ability of Treasury to inject capital into AIG. But ultimately, all of the government funding came back with a profit of \$22 billion.

Governance Issues

Absent a viable alternative to bankruptcy, the Federal Reserve and Treasury ended up with large lending and equity positions in AIG, which placed them in an unusual position regarding the governance of AIG. A difficult but important issue for the government when it provides emergency assistance is how much and what type of involvement the government should have in a firm’s operations.

In the case of AIG, the Federal Reserve and Treasury required the company to make changes to its management and its board of directors, required development of a plan to repay the government from the sale of assets of the company, imposed limits on new activities and expansion, and required regular reporting and access to information. The Federal Reserve and the Treasury also closely monitored the management, activities and financial condition of the company. These are actions that a private lender and preferred equity investor (the position obtained by the Treasury using TARP funds) in a troubled company might be expected to take.

At the same time, the Federal Reserve took steps to limit the role the government would play as a result of the government obtaining a sizeable amount of the voting securities of AIG in connection with the Federal Reserve’s loan by requiring AIG to place those securities into a trust overseen by trustees independent of the government. The trust was created to ensure that decisions regarding those shares—including any voting rights that might accrue—would be made by the independent trustees, not by

government policymakers. This meant the independent trustees would have an important role in the governance of AIG.¹⁸

These various conditions were designed to ensure that the taxpayer would be repaid, and the government would not become enmeshed in trying to operate AIG on a day-to-day basis. However, in the late fall of 2008 and into 2009, Congress and the public began to demand more government involvement in AIG's operations and management and Congress imposed limits on the compensation of executives and certain other employees of AIG by statute. Some of these demands were intended to incentivize AIG's management to repay its government assistance more quickly, to reduce any advantage AIG might have over other insurance companies and competitors that had not received government assistance during the financial crisis, or to advance other constituency causes. They also reflected a growing sense of unease about fairness and justness of government interventions to support the functioning of the financial system.

Some government involvement in the operations and management of AIG was an unavoidable consequence of government assistance of the size and type provided to AIG. The amount and type of government involvement in corporate governance will likely affect the willingness of firms to accept such assistance in the future. That may be desirable; but it will also potentially have a cost in that it could lead to more disruptive failures. This makes it even more critical that a credible supervisory and regulatory framework be in place to prevent the failure of a large systemically important firm and that a workable resolution framework be available in the event that prevention is not successful.

Availability of TARP to Support Other Nonbank Financial Firms

With the passage of EESA in early October and the availability of TARP funds, the authorities could respond more forcefully to reduce the fallout of financial firms' distress on the economy. Treasury used TARP to support some nonbank financial firms such as AIG, as described above, and for ringfence transactions for Citigroup and Bank of America. TARP also allowed the development of broader programs, such as the Capital Purchase Program that injected capital widely into the banking system. Other programs supported by TARP, such as TALF and PPIP, aimed at liquefying important funding and securitization markets, helped both troubled bank and nonbank financial firms to ease specific liquidity pressures. By being available broadly to all participants in particular markets, these facilities ensured that all participants in those markets—not just specific firms targeted for government assistance—had access to liquidity on the same terms and conditions. These TARP-supported programs complemented other programs deployed by the agencies, such as the FDIC's TLGP program and the Federal Reserve's CPFF program, which allowed large nonbank financial firms like GECC—one of the largest issuers of commercial paper—to obtain much needed funding.

¹⁸ Treasury, as the direct holder of the TARP preferred shares, coordinated with the trustees, but had independent rights with respect to executive compensation, and information and observation rights.

III. Nonbank Financial Sector After the Crisis

The nonbank financial sector looks very different from what it looked like on the eve of the financial crisis, as many firms failed, market participants changed their attitudes about the risks of these firms and the firms themselves adjusted their business models. Only two of the five largest U.S. investment banks in 2007 remain as standalone firms, but now operate as bank holding companies. The largest foreign investment banks operating in the U.S. always were parts of foreign banking organizations, but now are required by the Federal Reserve to set up an intermediate holding company for their U.S. operations. While many finance companies failed during the crisis, the largest firm did not and subsequently made a strategic decision to dramatically shrink its business. Activities that had supported the growth of nonbanks, such as securitization and short-term wholesale funding, shrunk sharply and remain below pre-crisis levels.

Before the crisis, many large securities firms had been regulated by the SEC, with the focus on investor protection rather than on safety and soundness and financial stability. Now, as parts of bank holding companies, these firms are subject to a regulatory and supervisory regime designed to ensure the safety and soundness of these firms, to mitigate the risk that such firms might fail in the future and to reduce the adverse consequences for the financial system and economy if they were to fail.

However, as this recent financial crisis demonstrated, financial markets are always changing and risks to the financial system and the economy may come from places that are not perceived as a threat to the system today. The Dodd-Frank Act took an important step to address this by establishing the Financial Stability Oversight Council (FSOC) to monitor and take actions to reduce systemic risk. The Council has the authority to designate nonbank financial firms as systemic and subject to regulation and supervision by the Federal Reserve. This bolstered the ability of the U.S. government to address systemic risks that might emerge over time in the financial system outside of the banking industry.

The Dodd Frank Act also provided a means to resolve a large systemic financial firm outside of the normal bankruptcy regime. Title II of the Dodd Frank Act established an orderly liquidation authority, that allows the FDIC (and in the case of a securities broker dealer, the SIPC) to resolve a nonbank financial firm in the event bankruptcy is not a viable option. Unlike a case under bankruptcy, the DFA provides that the resolving agency may take actions to avoid or mitigate serious adverse effects on the financial stability or economic condition of the U.S. At the same time, the Dodd-Frank Act reduced the Federal Reserve's 13(3) lender of last resort authority by prohibiting facilities designed to support individual firms and lending to firms that were deemed insolvent.

IV. Lessons Learned

We highlight several key lessons:

LESSON 1: NONBANK FINANCIAL FIRMS AND THE FUNDING MARKETS THAT SUPPORT THEIR BUSINESS MODELS ARE HIGHLY VULNERABLE TO THE LOSS OF INVESTOR CONFIDENCE, AND THEIR DISTRESS CAN POSE MATERIAL RISKS TO THE ECONOMY. Aggressive actions may be needed to contain the costs of fire sales and panics. The financial system changed in fundamental ways in the decades leading up to the crisis, with more credit and risk transfer provided through financial markets and intermediated primarily by nonbank firms. But many nonbank firms depend on wholesale short-term funding rather than stable insured deposits, and thus are more vulnerable to falls in investor confidence, which can lead to fire sales and market contagion. While not all nonbank failures will pose material risks to the economy, systemic risk is likely greater when the rest of the financial system and economy already are weak. The history of financial panics suggests that aggressive actions are needed to reduce the severity of losses for households, businesses and the economy as a whole.

LESSON 2: SOME CURRENT MARKET PRACTICES, SUCH AS DOWNGRADES OF DEBT BY THE CREDIT RATING AGENCIES OR MARGIN INCREASES BY EXCHANGES AND OTHER COUNTERPARTIES, ARE HIGHLY PROCYCLICAL. Crisis responders should try to anticipate this behavior when designing their countermeasures because its impact on the liquidity needs of an individual firm may have ripple effects, increasing the needs of other market participants. For example, AIG was downgraded following Lehman’s failure, leading to a substantial increase in its liquidity needs, and was downgraded again following the Fed’s liquidity funding because the rating agencies perceived the Fed’s credit terms to be onerous.

LESSON 3: REGULATORS SHOULD PREPARE, AND PRACTICE, COORDINATED RESPONSE PLANS TO REDUCE THE FUTURE RISK TO THE FINANCIAL SYSTEM AND ECONOMY FROM DISTRESSED NONBANK FIRMS. The extraordinary responses undertaken with respect to nonbank firms during the crisis required government agencies to combine their information, tools, expertise and judgment. This collaboration is especially important if the authorities that have tools, such as the Fed or FDIC, are not the primary regulator of a distressed firm or otherwise do not have regular access to information about the firm. Programs that supported short-term funding markets and securitization during the crisis were effective because they combined Treasury’s TARP capital with FDIC guarantees and Fed lending, all in line with the provisions of each agency’s legal authorities. Coordination enhances the legitimacy of actions by ensuring that various perspectives are fully considered.

LESSON 4: PUTTING GOVERNMENT CAPITAL INTO PRIVATE INSTITUTIONS CAN HELP PREVENT SERIOUS HARM TO THE ECONOMY, BUT THE TAXPAYER NEEDS TO BE COMPENSATED AND THE FIRM THAT RECEIVES ASSISTANCE MUST BE HELD TO THE SAME STANDARDS AND BUSINESS PRACTICES AS OTHER FIRMS. In the case of AIG, efforts were made during the crisis to avoid government control, through the creation of an independent trust to manage the government’s voting securities. However, the public’s perception was

that the ownership stake meant that the government should be able to direct AIG's actions. In the future, regulatory agencies should very clearly communicate their strategy and actions to lawmakers and the public to prevent a similar political backlash. In particular, the agencies need to explain that an intervention to prevent a firm's failure is not motivated by a desire to save the firm per se, but rather to avoid a breakdown in the financial system that could have terrible consequences for employment and other economic activity.

LESSON 5: FINALLY, IT IS IMPORTANT TO KEEP THE REGULATORY AND SUPERVISORY REGIME, AS WELL AS CRISIS MANAGEMENT TOOLS, UP TO DATE WITH THE EVOLVING STRUCTURE OF THE FINANCIAL SYSTEM.

In the decades preceding the financial crisis, the nonbank sector grew rapidly in scale, scope and complexity, with securitization, derivatives and money markets enabling securities firms to compete more effectively with depository institutions. But the regulatory regime did not keep pace with those changes and risks arose “in the cracks”—and the tools available to help distressed nonbanks had been designed for a financial system dominated by commercial banks. We should expect that the financial sector will continue to evolve, responding to new regulations and technological developments. The regulatory and supervisory regimes must evolve, too, with regular updates tied to a macroprudential policy approach.

As mentioned above, the Financial Stability Oversight Council now has the responsibility to monitor and take actions to reduce systemic risk, including designating nonbank firms as systemic, and thus subject to prudential regulation and supervision, and assessing certain activities as systemic. Reducing system risk also requires having a credible resolution process when there is no capital available and when bankruptcy, the preferred approach under the Dodd Frank Act, is not a viable option. Title II of the act gives orderly liquidation authority to the FDIC, providing a way to resolve a systemic nonbank firm to forestall contagion to similar firms and to the broader economy.

Revising crisis management tools is equally important since even up-to-date regulatory regimes will not be able to prevent financial crises from ever happening again. Policymakers should consider expanding the Fed's authority as lender of last resort to nonbank financial firms, which have become critical participants in funding and capital markets. With appropriate prudential standards in place, access to a lender of last resort at a penalty rate and well-secured by pledged collateral, on a timely basis rather than only when circumstances are judged to be unusual and exigent, may not unduly increase moral hazard risks. Such an expansion would improve the stability of funding for all firms by reducing the odds that liquidity stresses on one firm escalate into contagion and solvency problems for others.