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Ten Years after the Financial Crisis: A Conversation with Timothy Geithner

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Abstract

Lehman Brothers' failure and the vulnerabilities of the large investment banks and other nonbank financial institutions were a major part of the 2007-09 financial crisis. Ten years after the crisis, the Federal Reserve's decisions about how to respond to the potential failures of these institutions remain among the most controversial it made during the crisis.

The following questions and answers were prepared for our course on the global financial crisis at the Yale School of Management. The questions focus on the rescues and attempted rescues of Bear Stearns, Lehman Brothers, and AIG by the Federal Reserve and the Treasury.

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Q: Let's start with the role of the investment banks and other nonbank financial firms in the United States. How important were they for the economy and why were they so vulnerable?

A: On the eve of the crisis, at the beginning of 2008, commercial banks supplied less than 40% of the credit provided by the broader financial system to U.S. businesses and households, down from nearly 70% in 1980. The rest of the credit was supplied by a variety of *nonbanks*, including the major independent investment banks, money market funds, large financial firms like AIG and GE Capital, large government-sponsored enterprises like the mortgage firms Fannie Mae and Freddie Mac, and the auto finance companies.

These institutions operated outside the protections that the U.S. had put in place to safeguard banks after the Great Depression. Banks were subject to regulatory capital requirements and limits on leverage, and had access to a safety net comprised of deposit insurance and access to the Federal Reserve's standing lending facility. The Federal Deposit Insurance Corporation's resolution regime provided a range of tools for intervening to address the risks posed by bank failures.

For historical reasons, investment banks and other nonbanks existed outside this mix of protections for the banking system. The five major independent investment banks, for example—Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch and Morgan Stanley—operated with thin capital cushions and very high leverage ratios. At the same time, they relied heavily on short-term borrowing, making them potentially more vulnerable to runs. Furthermore, the dangers posed by their reliance on short-term debt were magnified by the nature of their businesses, which depended critically on the continued confidence of customers and counterparties. A loss of confidence therefore threatened not only their short-term funding but their very viability as ongoing enterprises.

Q: Why was the vulnerability of investment banks and other nonbanks so consequential for the rest of the financial system and the broader economy during the crisis?

A: The vulnerability of the major nonbanks and their large role in the financial system made the overall financial system more fragile and much harder to stabilize as housing and mortgage problems worsened and fears of recession increased. The capital of the commercial banking system was relatively greater, but it too would prove insufficient. Ultimately, the traditional banking system (banks with insured deposits) was not strong enough to withstand the pressures that came from the breakdown of the rest of the financial system. Nor did it have the capacity to expand lending sufficiently to offset the loss of financing from other parts of the system.

For these reasons, policymakers at the Fed, Treasury, and other regulatory bodies could not responsibly sit back and ignore the risks posed by the weakness of the major nonbank institutions to the stability of the overall financial system and to the broader economy.

Our challenge was that regulators and the executive branch had a very limited and weak set of tools for dealing with those risks until Congress acted in October 2008 to provide the Treasury with broader emergency authority.

Q: What was the division of responsibilities between the Federal Reserve and other parts of the government in dealing with the financial crisis?

A: There was a lot of magical thinking about the powers of the Fed in a financial crisis, but they were in fact relatively limited. In the simplest terms, the Fed was responsible for helping address problems of liquidity, while deeper problems of solvency were left to the fiscal authorities, meaning the Congress and the Treasury.

The Federal Reserve, like central banks in other major economies, was given authority to act as “lender of last resort” to the financial system. The classic role of the lender of last resort is to help address liquidity problems by lending to viable or solvent institutions, taking “sound assets” as collateral. The ability of a private commercial bank to borrow from the central bank, with the bank’s assets serving as collateral (minus some haircut to protect against loss), can help keep the banking system liquid and operating, even as deposit insurance protects depositors and helps to reduce the risk of runs and panics. Importantly, in the U.S. financial system, only banks have routine access to the Fed’s discount window lending facility. By invoking little-used emergency authorities, the Fed was able also to lend to nonbanks in a severe crisis, but, as with banks, only to the extent that the value of the loan could be secured by collateral.

The ability to lend against collateral can be valuable in a crisis, but it has limited power in conditions where the overall stability of the financial system is at risk, and in preventing the failure of individual financial institutions. The powers of the lender of last resort are not a substitute for, or equivalent to, the ability to inject capital or to guarantee the liabilities of a financial institution. In particular, lender of last resort powers are not a substitute for deposit insurance, which protects providers of short-term funding even in the event of insolvency. There was, of course, no deposit insurance or equivalent outside the banking system during the crisis. But even the combination of lender of last resort facilities and deposit insurance cannot keep a financial firm operating if its assets are worth less than its liabilities.

In the U.S. system, the FDIC had authority to provide guarantees to banks and the ability to provide funding as needed to achieve efficient resolutions of failing banks, but no institution had the ability to provide either guarantees or capital to institution that were not banks. Such authority required legislation by Congress.

After deploying a number of programs to provide liquidity to the system, by the spring of 2008 the Fed was approaching the limits of what its lending powers could do to mitigate the crisis. Ultimately, the Treasury Department, on behalf of the Bush administration, had to ask Congress for broader emergency authority, first to inject capital into Fannie and Freddie, and then, in September, to enable a more powerful mix of capital injections and guarantees for the broader financial system.

Q: You ended up using the Fed’s emergency authority Section 13(3) of the Federal Reserve Act many times in the crisis. What were the conditions and limitation on the use of that authority in preventing the failure of a large nonbank financial institution?

A: Section 13(3) of the Federal Reserve Act gave the Fed the ability to lend to a nonbank if we could satisfy three conditions. The first was that the circumstances be “unusual and exigent.” With the stability of the financial system at risk, that was clearly the case even in early 2008. The second was that there was no other source of private financing available for the firm at issue.

This condition was designed to make it hard for the Fed to intervene pre-emptively; we had to be able to demonstrate that the firm or firms at issue had already lost access to private funding, or that they were well on their way to that point. This was certainly true for Bear in the days leading up to its failure. The third condition required that the loan be “secured to the satisfaction of the [lending] Federal reserve bank” (the Federal Reserve Bank of New York in this case); in practice this limited the amount the Fed could lend to the amount of collateral available.

Q: How much discretion did the law give the Fed in judging how much it can lend?

A: Some discretion, but not much. Of course, the term “secured to the satisfaction” did leave some room for judgment by the Fed in evaluating the value of the firm’s financial assets, and in the even more complicated assessment of what the firm’s businesses might be worth and what income they might generate over time. We could take some risk of loss, but there had to be a reasonable expectation that the collateral would fully cover the value of the loan. We could for example look at the distribution of potential losses if we lent against some mix of assets and businesses over a period of several years.

Q: How did you decide whether to intervene to try to prevent the failure of an investment bank or another nonbank financial institution?

A: We didn’t go into this crisis expecting to prevent the failure of a nonbank, and we had no predefined strategy for how to do so. We relied on a set of general principles for feeling our way through the choices.

First, we considered if the failure of the institution was likely to 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, we considered if the broader provision of liquidity to the markets – rather than an individual institution – could contain the risk of runs at other firms in event of the institution’s failure. If so, the Fed’s preferred course of action was not to intervene to prevent the failure of a specific institution, but to provide additional liquidity to the market.

Third, if we were not confident that the broader provision of liquidity to other firms or the markets more generally would be sufficient to contain the damage, we then considered whether we had the authority to prevent the failure of the institution, either by helping a stronger firm acquire the weaker one, or, if no private-sector solution was available, determining whether a loan within our authority could enable it to survive. This required consideration of a number of factors including the magnitude of the firm’s funding needs, the value of its financial holdings and businesses, and judgments about the longer-term viability of the firm itself.

Q: Let's turn to some specific episodes. Why did the Fed help prevent the failure of Bear Stearns?

A: Intervening to save Bear Stearns wasn't our initial inclination. But as we worked into the early hours of Friday morning on March 14, 2008, and examined the potential fallout from a default by Bear Stearns, Chairman Bernanke and I and our staffs, in consultation with the Treasury, concluded that Bear was so interconnected into the infrastructure of the financial system, a system already under severe stress, that a failure would be extremely damaging. In addition, we were not confident that our ability to provide liquidity to the broader financial system could contain the damage if Bear failed. That left us to try to save it from failure.

If the financial system had been more stable than it was, we might have decided to let Bear fail, as, for example, the Fed did in the case of Drexel, Burnham, Lambert in 1990. However, due to the broad deterioration in the financial system as well as the fragility of other institutions, we did not think this was a responsible option.

Q: Once you decided to intervene with Bear, how did you do that?

A: We did not believe that we could prevent Bear's collapse on our own simply by extending a loan. With its counterparties fleeing, its core businesses bleeding away, and the value of its financial assets plummeting, we did not believe that lending against its available collateral would be effective in allowing Bear to survive. Bear had already lost the confidence of its creditors and counterparties. It could not operate as a broker-dealer, a market maker, or as a provider of insurance against changes in interest rates, exchange rates, or the risk of corporate defaults without that confidence. We believed that for the Fed to lend against whatever collateral we could find would not work to save Bear. We decided that to lend into a run on an institution that the market had decided was fundamentally not viable would simply finance the exit of the most agile of Bear's private creditors and counterparties, while Bear's businesses would continue to erode rapidly. So we decided to see if we could find a willing buyer that was strong enough to take on Bear's obligations and stabilize its businesses.

Q: And that, of course, was JP Morgan?

A: Yes, we were ultimately able to convince JP Morgan to acquire Bear, in part by agreeing to lend to a vehicle that would hold a \$30 billion portfolio of Bear's assets. For the Fed, this arrangement met the legal requirement to make only fully collateralized loans, and we judged the risk of the loan would be relatively modest. One-third of those assets were obligations guaranteed by Fannie and Freddie, which we believed were essentially obligations of the government; the remaining \$20 billion of assets included a range of real estate and other investments that involved some risk, but a risk we saw as manageable given that we could hold the assets for a period of time. And later, we convinced JP Morgan to commit to give us additional protection, by agreeing to absorb the first \$1 billion of any losses. (The Federal Reserve Bank of New York ultimately earned almost \$700 million on the Bear portfolio. The Fed's profits are eventually turned over to taxpayers through the U.S. Treasury)

With this assistance, JP Morgan agreed to assume all of the rest of Bear's obligations and to fully guarantee its trading obligations, which was essential to stopping the flight of Bear's customers and counterparties and thus to stabilize its businesses.

With these actions, Bear no longer existed as an independent entity, but we avoided the severe damage that would come with default. By acting to help prevent Bear's failure, however, we probably did create the impression that the Fed had both the will and the authority to prevent the failure of other large financial institutions, more authority than we in fact had.

Q: You asked Treasury Secretary Hank Paulson to write a letter expressing support for Fed's actions, even though the Fed's actions did not require his approval. Why?

A: We were taking exceptional action to help prevent the failure of an institution we did not regulate or supervise, and invoking emergency powers the Fed had not used since the Great Depression. And we were taking risks that, if they resulted in losses to the Fed, would ultimately cost the American taxpayer. In that context, we thought it was appropriate, not just to consult closely with the Treasury, but to get the Secretary's support on the record. This did create the impression to some, an impression that was important in the aftermath of the events around Lehman, that we were compromising the Fed's ability to act independently of the Treasury, and allowing the possibility of other policy objectives or political concerns limit what the Fed could do. However Secretary Paulson was supportive of the Fed using all its authorities to the fullest possible extent throughout the crisis.

Q: The same weekend you helped save Bear Stearns the Fed used its emergency authorities to put in place a new liquidity facility for the other investment banks. Why did you do that?

A: Those investment banks were also under severe funding pressure. We believed that the near failure of Bear Stearns would further erode confidence in the stability of the other investment banks and intensify the considerable stress on the rest of the financial system. So we created the Primary Dealer Credit Facility (PDCF) to provide liquidity to the roughly 20 firms that were primary dealers, which enabled their broker-dealers to borrow from the Fed against certain types of collateral. All the investment banks borrowed from this facility, but as we learned over the course of the summer, it was no panacea as fears of losses continued to increase and the recession deepened.

Q: So even with the extra funding available, Lehman got into trouble and you were not able to prevent its failure as you had Bear's. Why?

A: Lehman and Bear presented the Fed with essentially the same problems. We had the same limited options. The outcomes were different only because in the Lehman case we were unable to find a willing buyer. Both Bear and Lehman were, at the times of their failures, the weakest of the independent investment banks, and, in both cases, the market had lost confidence in their ability to survive as independent entities. They were both large and interconnected, and we believe in both cases that failure would severely weaken an already fragile financial system. Chairman Bernanke, Secretary Paulson and I believed it was exceedingly important in both cases to try to prevent their failures. The question was not whether we should try to save the firms; we knew the answer to that. The question was whether doing so was feasible, given the authorities we had at the time. As with Bear, we believed that our only hope to prevent Lehman's failure was to find a stronger acquirer.

Q: Why was there no acquirer for Lehman?

A: Finding an acquirer for Lehman was more challenging than Bear because Lehman was larger (more than one and a half times the size, by assets), its perceived losses were substantially greater, and, by early September 2008, the economy and the financial system were much weaker than they had been in March. This meant that there were few other institutions large enough and strong enough to be able to acquire Lehman, even with the possibility of some assistance from the Fed. Bank of America looked at Lehman's assets and concluded that the losses were too great. Barclays was the only firm that remained interested in acquiring Lehman that weekend, but its regulators in the United Kingdom were not willing to allow it to go forward on the terms that made JP Morgan's acquisition of Bear Stearns work. Specifically—pending a vote of the shareholders, which could not be held for weeks—the UK regulators were not willing to allow Barclays to provide the full guarantee of Lehman's obligations that JP Morgan had provided in the Bear case. We all recognized that without that guarantee Lehman could not survive. The lack of an acquirer left us with no ability to prevent the failure of the entire firm, though we were able to help prevent the failure of the broker-dealer until that unit of the broader firm was acquired by Barclays.

Q: How did you decide that Lehman was too weak for the Fed to save on its own, using only its lending authority?

A: The market had completely lost confidence in Lehman. Lehman's stock price declined by a remarkable 95% from the start of the year to the day before its failure. In the markets for credit default swaps, the price of insuring against Lehman's default increased by more than eight times over roughly the same period.

Lehman's leadership had spent the summer months in a series of talks with potential strategic investors, but the information it revealed about the condition of its assets and businesses only discouraged interest. Many of the other large New York firms had financial positions similar to Lehman's, but they had already marked the value of those positions down to levels substantially below where Lehman was holding them. Lehman tried in late August to spin off a portfolio of real estate assets, but abandoned that effort when it could not get the market to consider a value for the assets close to its own marks. The last strategic investor from whom Lehman had been seeking capital, the Korean Development Bank, lost interest soon after. Lehman's potential acquirers that weekend believed the firm was facing losses, beyond the value of its equity, in the range of ten billion dollars or more.

As a result, there was ultimately no "strategic" investor, no competing investment bank, no other potential acquirer who saw enough value in Lehman's businesses and financial assets to be willing or able to rescue the firm on their own and provide the needed capital or guarantee to make the business viable.

Q: So, if you could not save Lehman because there was no acquirer, what could you do?

A: We worked very hard to contain the damage. Our plan, in the event we were unable to find a buyer for the entire firm, was to lend to Lehman's broker-dealer while it worked down its trading book, and therefore help facilitate a more orderly wind down. Fortunately, Barclay's came back to the table to negotiate a purchase and assumption of the broker-dealer assets and most of its

liabilities and then took over as liquidity provider to the broker-dealer. In the meantime, we lent tens of billions of dollars (our exposure peaked at \$68 billion) to Lehman's broker-dealer through the PDCF, secured by the financial securities owned and pledged by the broker-dealer. The broker-dealer was not part of the parent's bankruptcy filing because it was subject to a bankruptcy-like dissolution process pursuant to the Securities Investor Protection Act (SIPA), so we weren't lending into a run as with the parent company. This lending, which was substantially less than what we thought the parent would have needed, allowed this smaller unit to continue to operate and wind up its business until could be acquired or wound down through the SIPA process. (As it turns out Barclay's bought the unit in the SIPA proceeding.) It also prevented the greater damage that would have accompanied an earlier liquidation and default by the broker-dealer.

And, building on what we had first put in place the weekend of Bear's near failure, the Fed dramatically expanded the scope of collateral that could be used under the PDCF. We also increased the power of our funding facilities for banks. Treasury provided a guarantee for prime money-market funds. The Fed put in place facilities to prevent the collapse of the commercial-paper markets. And the Treasury asked Congress for emergency legislation that ultimately provided the tools for breaking the financial panic.

Q: You lent to Lehman's broker-dealer until it was acquired by Barclays. Why couldn't you have done the same for the parent?

A: By that Sunday, once Bank of America had decided to buy Merrill Lynch and not Lehman, Barclays was the only plausible remaining buyer. Lehman had exhausted all other potential avenues. We were close enough to Lehman's failed efforts over the summer and knowledgeable enough about the strengths and weaknesses of the other major global banks to conclude that there was no other potential buyer on the horizon.

In the end, Barclays was somewhere between unwilling and unable to acquire the entire firm. Its UK regulators, concerned about how strong Barclays itself was in the face of the intensifying crisis, were not prepared to allow it to take on the risk of a Lehman acquisition or allow it to provide the necessary guarantee of Lehman's trading obligations.

The FRBNY was able to act to avoid the damage from a precipitous liquidation of the broker-dealer, because the broker-dealer was much smaller than the firm as a whole, its liquidity needs were smaller, and the value of the collateral held in that entity sufficient to cover the immediate funding needs. Most of the assets that were the source of concern about Lehman's viability were held outside the broker-dealer.

Q: In the case of the Lehman parent, couldn't you have just decided to lend them an unspecified but unlimited amount for an unlimited amount of time? And wouldn't buying time have helped?

A: We debated this as late as that Sunday afternoon, but concluded, as we had in the Bear Stearns case, that a loan against the available assets would not work. We could not lend Lehman an amount of money greater than a rough estimate of the value of its businesses and unencumbered assets, minus some margin to protect against loss. And we didn't think a general commitment to lend would have been effective in restoring confidence. There was no plausible buyer on the

horizon. Time would not help. Without a guarantee or an injection of capital, which we could not provide, the run would continue, and Lehman's businesses would bleed away, and quickly.

Q: Treasury officials were quoted in the press before Lehman weekend stating that no "public money" would be available to help prevent Lehman's failure. Why? And did that have an effect on the outcome?

A: There was no solution to Lehman without a willing and able merger partner or acquirer to absorb the vast bulk of the risk, because neither the Fed nor the Treasury had the legal means to assume that type of risk. If potential private buyers believed that the Treasury or the Fed could and would step in to prevent Lehman's failure, then there would be no chance of a private solution. And if the potential acquirers believed they could leave most of Lehman's risk with Fed that too would undermine the possibility of a viable solution, since the Fed had a limited ability to lend. In that context, the Treasury statements were designed to improve the prospects for a favorable outcome to Lehman's problems, not to reduce them. The Fed was prepared to help facilitate a merger, as we had in the Bear Stearns case. And Chairman Bernanke and I were confident that Secretary Paulson would have supported the Fed providing some financing if that would have helped convince a potential buyer to acquire Lehman.

Q: Did you do an analysis of Lehman's solvency?

A: The Fed's emergency authority does not require a determination of solvency, but we had to make a judgment about how much we could plausibly lend and whether a loan would work. This is hard to do in the context of a run on an investment bank in a fragile financial system. We used the information available to evaluate the factors behind the market's loss of confidence, to assess the viability of Lehman's underlying businesses, and to examine various outside views of the value of its various financial assets.

That gave us what we considered substantial evidence there was not enough value for us to stabilize the firm with a loan against the available collateral. Lehman's assets were underwater, and the bulk of the business was fragile—rapidly losing customers, with limited earnings capacity and little ability to retain employees and convince counterparties to continue to trade with it. After its bankruptcy filing the court-appointed examiner determined that the firm had likely been insolvent beginning on September 8th and perhaps as early as September 2nd.

To survive, Lehman would have needed capital and a guarantee, neither of which the Fed could provide, nor at that time could any part of the U.S. government. (Again, this would change only after Congress passed the Troubled Asset Relief Program, signed into law by President Bush on Oct. 3, 2008, that gave the Treasury the legal ability to invest capital directly into firms, including nonbank firms.) It's worth noting that even after JP Morgan announced its intention to purchase Bear Stearns and assume its liabilities, the run on Bear's businesses continued until investors were confident the shareholders would approve the acquisition. This experience strengthened our belief, that for a failing investment bank, the only feasible option was a willing buyer with the ability to guarantee the firm's liabilities.

Q: Didn't Lehman have a lot of subordinated debt, and wouldn't that have given you a sufficient layer of protection?

A: It seems unlikely, even in theory and even with the benefit of hindsight, that Lehman's equity together with its subordinated debt would have provided sufficient protection. We had no practical or legal ability to turn Lehman's subordinated debt into an equity layer of protection for the Fed.

Moreover, a substantial amount of Lehman's assets was pledged to other creditors. If it had had unencumbered assets on a large scale, it probably would have been able to borrow against them in the market. Lehman, like any large investment bank, also had trillions of notional value in derivatives contracts, which were a potential cash drain of unknowable magnitude. Apart from the subordinated debt, Lehman had billions of other borrowings that would have to be serviced and would mature over time. The core earnings power of most of the firm's businesses had eroded dramatically. The rapidly falling value of all financial assets and the force of the panic already in motion meant Lehman's actual losses were likely already much larger than the various estimates put together that weekend. A loan large enough to replace all the maturing creditors over an indefinite period of time would have left the Fed exposed to huge losses.

Q: Are you saying it was a legal judgment about the limits of the law, or a practical judgment of what would work, that drove the Lehman outcome?

A: It was a combination of the two. The legal constraint was that any loan we made had to be reasonably commensurate with the amount of unencumbered collateral the firm could offer. The related, practical consideration was whether such a loan would serve to save the company. With respect to Lehman, we believed it would not.

To have lent up to the limit of even a generous valuation of Lehman's collateral would not have prevented failure, it would have just have financed the exit of some creditors at the expense of others. The value of an investment bank depends in significant part on the willingness of customers and counterparties to deal with it, and that confidence was just gone. To prevent failure would have required a mix of capital or guarantees that only a strong buyer or the government of the United States could have provided, and the government did not have that authority until Congress passed TARP. If we had been armed with TARP at the time of Lehman's failure, we might have been able to affect a different outcome.

It's worth noting that the prevailing public and political sentiment, even as late as Lehman weekend, was that we should let the market work and not step in to prevent more failures. We did not share that view, but we were not equipped at that point to prevent the failure of the weakest firms, nor to contain the damage from those failures.

Q: Why couldn't you have made Lehman a bank holding company, like you subsequently did for Goldman Sachs and Morgan Stanley?

A: Bank holding company status alone would have done nothing practical to mitigate Lehman's problems. It would not increase the amount they could borrow from the Fed; they already had access to the Fed lending through the PDCF, and they didn't have banks with deposits large enough to finance a meaningful part of the investment banks' assets. Crucially, in the cases of

Goldman and Morgan Stanley, our willingness to make them bank holding companies was conditioned on their raising substantial outside capital from strategic investors. They were able to do so, in contrast to Lehman's failed efforts over the summer.

Q: If you didn't have the legal authority to prevent Lehman's failure without a willing buyer, why didn't you say so at the time?

As Hank Paulson and Ben Bernanke wrote in their memoirs of the crisis, we believed that if we had stated explicitly that we had no authority to intervene to prevent the failure of another large financial institution that would have made the crisis worse. It's hard to know exactly how the market would have responded to such a statement, but that was the judgment we made at the time. Secretary Paulson was in the process of convincing the White House to ask Congress for emergency authority, but that would take time. We were concerned the crisis would intensify and we needed to continue try to hold the system together until Congress acted.

Q: How important was Lehman as a cause of the crisis?

A: Lehman's failure was a product of the forces that created the crisis, not a fundamental cause of those forces. By that weekend in September, the Fed had made unprecedented levels of liquidity available to the nation's banks and nonbank financial institutions, Bear Stearns had collapsed only to be saved at the last minute, and the government had effectively guaranteed the trillions of dollars of obligations of Fannie and Freddie. Despite these efforts, Merrill Lynch, Lehman, and AIG were all at the edge of failure, and Washington Mutual (WAMU), Wachovia, Goldman, and Morgan Stanley were all approaching the abyss. The Fed and the government were trying to fight the crisis with an arsenal of tools that was still inadequate because there was no authority to inject capital into nonbanks or to guarantee their liabilities. Even if we had been able to facilitate a successful merger of Lehman, it is highly likely that one of the other troubled companies would have failed despite our best efforts.

A popcorn metaphor coined by Ed Lazear, who chaired Bush's Council of Economic Advisers, is apt. Lehman was one of the early kernels of corn that gave way to the heat of the stove. If the overall heat had been less severe, and the major global financial firms significantly stronger, then there might have been a willing buyer for Lehman, or Lehman's failure might have been absorbed with less trauma to the overall system. But by September 2008, the global financial system was already at the edge of failure, and the damage was so severe Congress was eventually persuaded to pass the TARP, thereby providing the tools that ultimately allowed the U.S. to stop the panic and repair the financial system.

Q: Was the fallout from Lehman worse than you had expected?

A: Yes. We thought it would be bad, but it was much worse. The market had spent the past six months reducing exposure to Lehman. The price of insurance against its failure suggested default was imminent. Lehman's shareholders had already lost much of the value of their investment. So its collapse was hardly a surprise. The damage was severe in part because it helped cause the run on money-market funds. Probably the more important consequence of Lehman was that it exposed the limits of the tools we had before TARP both to prevent the failure of a major nonbank financial institution and to arrest the ongoing run on the financial

system. The market, perceiving we were running out of options, did the rational thing, and rushed to safety, exacerbating the panic, and bringing the financial system to the edge of collapse.

Q: After Lehman failed you saved AIG. Why AIG and not Lehman?

A: We asked the same questions as we had with respect to Bear Stearns and Lehman. As with Bear and Lehman, we believed that the failure of AIG would pose a major threat to the financial system and the economy, but—in contrast to the other cases—we had a reasonable expectation that a fully collateralized loan would allow AIG to meet its obligations and continue to operate. That was consistent with market judgments at the time, but the market was not able to mobilize the necessary \$85 billion loan in the hours available. Unlike Bear and Lehman, AIG had both plenty of collateral to back our loans and a set of apparently viable, stable businesses, including a vast array of highly regulated insurance subsidiaries around the world with substantial value. It's true that AIG was in worse condition than we thought when we made the loan, and we subsequently had to make new loans and change the terms of our lending. Ultimately, though, we recovered all of the loans made to AIG, plus \$20 billion profit for the taxpayer.

Q: Did the Fed's views on the limits of your authority change over time? Did your interpretations become more expansive as the crisis worsened?

A: Over time, we were able to find new ways to expand the limits of our authority, and to use that authority in creative ways that had not been tried before. But we could not relax the fundamental constraints set in law. The Fed's authority was not designed to be and could not be contorted into becoming the equivalent of capital or a guarantee. Even its lending authority was used creatively, the lender of last resort could not on its own prevent the failure of institutions the market had decided were too weak to survive.

Q: Any lessons from this experience for the future?

A: Lots of lessons. Don't let your financial system outgrow its protections. Don't design your oversight structure so that it covers only part of the financial system. Make sure in peacetime you have the full arsenal of tools to confront the extreme crisis. If all the most important actions to prevent a panic or repair a broken financial system have to go through Congress when the crisis is already raging, then the risk is that our successors will be too constrained and late in protecting the country from damage that is avoidable. Recognize that in the extreme crisis you have to be able to do whatever it takes to protect the core of the financial system and keep it functioning. And you have to keep at it until the damage has healed and the economy is growing again.

The reforms put in place after the crisis provide a much stronger set of defenses, with much higher capital cushions that are applied broadly across the financial system. Congress also legislated new powers that will help facilitate the orderly liquidation of failing financial firms like Lehman and AIG. But Congress took away a range of important powers that will be essential in any future crisis, limiting the Fed's lending facilities in an emergency and the FDIC's and the Treasury's abilities to provide broader guarantees.

On balance, the stronger regulations on risk taking combined with the new resolution authority should create a stronger financial system, much stronger than it was in 2007, and capable of withstanding a range of severe shocks. But they are not designed to and cannot protect against the most severe systemic financial crisis. That would require a broader range of emergency firefighting authority like we used in late 2008 and 2009, and like all countries have been forced to use in the severe financial crises of the past.