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MORAL HAZARD IN THE FINANCIAL CRISIS OF 2008

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ABSTRACT

Throughout the credit crisis, the government prevented a depression-like scenario by providing assistance for a select few firms that were deemed too big to fail. Did this government assistance set a precedent that encourages surviving firms to take on even more risks, or has moral hazard been kept at bay? No one may be able to agree on a definitive answer, but most can agree that risk tolerances today are much lower than pre-crisis levels. Some even suggest that banks are becoming too cautious as they hold excess reserves when they should be taking on more risk by lending more freely. The observation of increased risk aversion is a short-term phenomenon because the pain felt by the recent credit crisis is fresh on the mind. Moral hazard, on the other hand, is a long term problem that lurks in the depths of the corporate psyche and waits to unleash its destructive power once the next asset pricing bubble is formed. Asset pricing bubbles are a sign of well functioning financial markets, but too much of a good thing can be a bad thing. Asset pricing bubbles should be embraced for the fundamental service they provide for the economy: they help to reign in risk if the downside is absorbed by the risk-taker. When government intervention eliminates all or part of a risk-taker's downside by forgiving a portion of the principle payment on an individual's mortgage or providing a lifeline to an insolvent financial firm, the individual or firm will have a greater incentive to take on more risk in the future.

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Introduction

The government has always been reluctant to offer assistance to any risk-taker for fear of cultivating moral hazard. Despite this reluctance, bold government intervention became the norm in the midst of the housing market's collapse that began in early 2007. The housing-induced crisis was fundamentally different than the typical asset-pricing bubble that tends to occur every five to ten years. This time, it was more severe and posed greater risk of system-wide disaster. Each government-led rescue during the crisis was widely believed to have prevented global economic catastrophes, regardless of whether the bailout was for one firm in the cases of AIG and Bear Stearns or for the broader financial system in the case of TARP. Going forward, the government will need to take steps to ensure that the actions of a few firms cannot lead to such a far-reaching consequence. Thoughtful government regulation can steer the financial system away from becoming too interconnected and allowing any single firm from being too important. By looking in the rearview mirror, the government can take these common sense steps to fix what was broken:

- Increase the amount of paperwork a borrower must present before obtaining a loan.
- Align mortgage originators' compensation with the quality of the loans, not the quantity of mortgages underwritten.
- Simplify loan terms, penalizing the use of complex mortgage products like adjustable rate mortgages.
- Limit securitization that obscures the credit quality of the underlying asset, but encourage more transparent forms of securitization to promote market liquidity.

These measures might help us avoid another similar crisis, but each new crisis presents new and unpredictable variables. The possibility of all future crisis can never be completely eradicated, but their impact on the broader economy can be minimized. Treasury Secretary Henry Paulsen proposed increased powers for the Federal Reserve, charging it with the daunting task of overseeing all financial institutions. Whether it is the Federal Reserve or a new agency, it is clear that some type of super-regulator is needed to oversee the entire system. The modern financial system has become much too complex and interconnected to be effectively regulated by our current patchwork system of regulation. It is rooted in the 1930s New Deal Era and contains other legislation that was added through the decades since in a piecemeal fashion.

The debate over financial regulatory policy holds unanswered questions about the government's role in saving the markets during times of crisis. Do government bailouts create unintended consequences that overshadow a bailout's positive effects? Have government bailouts of 2008 and 2009 set precedents that have led to the perception of a permanent safety net for future generations of risk-takers? Each time a bailout was considered, government leaders have been hypersensitive about this very important concept of moral hazard. In bailing out AIG, Bear Stearns and the entire financial system with TARP, the government did indeed set a dangerous precedent. However, proponents a bailout insist that the evils of moral hazard were not as great as the havoc that would have ensued had the bailouts been foregone. Some suggest that the government should have been even less concerned with moral hazard. President of the European Central Bank Jean-Claude Trichet said that the U.S. made a mistake by letting Lehman Brothers fail because the failure of the firm caused a global financial crisis (Paulson 348). The U.S. government decided to let Lehman Brothers fail for the obvious fear of taxpayer losses; but to greater extent, the concern was of setting a precedent that invoked moral hazard.

To lay a foundation for a structured approach in handling future financial crises, one needs to examine the implications of the government's interventions in the private sector. It is important to develop this understanding not only for public sector decision makers, but also for private sector participants who want to anticipate public sector responses to their own actions.

The government wants the private sector to be responsible for the downside risks of their investments. After careful study of the credit crisis, it becomes increasingly apparent that the government will not be so generous in the aftermath of the next asset pricing bubble. In other words, this time *was* different. Those looking to the government interventions during the credit crisis as reliable precedents for future crises will likely find their assumptions invalidated.

Chapter 1. Laying the Foundation for Disaster (2001 – February 2008)

Easy credit for homeowners

As the Fed tried to clean up one mess, it was adding fuel to fire another crisis. The previous Federal Reserve Chairman Alan Greenspan cut the Federal Funds Rate in several stages from 6.5% in January 2001 to 1% in June 2003 in an attempt to spur economic activity following the tech bubble of 2001/2002. In this low interest rate environment, lenders eased terms on loans and lent more freely to less-than-creditworthy “subprime” borrower. Subprime loans had grown from just 5% of mortgage originations in 1994 to roughly 20% in 2006. This pushed home ownership up from 64% to 69% over the same time period (Paulson 65).

Increasing home ownership can have positive effects on society, but during the formation of the housing bubble, it came with undesirable consequences. Too many people were able to obtain mortgages that they were unlikely to be able to pay off. Sometimes the borrower intentionally took on this risk, speculating that the value of the house would continue to rise in which case the increased home equity could help pay the mortgage obligations. In other cases, borrowers had fallen victim to predatory lending practices that ultimately led to foreclosures. Adjustable rate mortgages (ARMs) allowed borrowers to pay artificially low "teaser" rates for a limited amount of time, but many people did not adequately plan for the uptick in their mortgage payment, resulting in high rates of foreclosure. ARMs, a popular instrument among predatory lenders, accounted for 6.5% of all mortgages but 50% of all foreclosures. (Paulson 66)

Mortgage originators allowed this to happen because they didn't have any skin in the game. They were paid on commission, so they favored quantity over quality. Those with skin in the game were the investors – the commercial banks, insurance companies, and pension funds who actually held exposure to mortgages on their balance sheets.

Securitization: MBSs and CDOs

Mortgage originators and investment banks packaged mortgages together into mortgage backed securities (MBS) that allowed real estate investors to diversify their holding across geographic areas. In addition to simply packaging mortgages together, the cash flows of the mortgages were split into different sections resulting in new securities called collateralized debt instruments (CDOs). Some CDOs carried claims on cash flow streams of mortgages that came with a high probability of receiving payment, but others were backed by cash flow streams that were unlikely to be paid back. The complexity of these securities due to the packaging and re-packaging of cash flow streams on mortgages investors in the dark about the true credit quality of their holdings. The process called securitization surprisingly enough produces economic benefits under normal circumstances. In addition to providing investors with diversification opportunities, it increases liquidity for the asset class, thereby reducing the rate the borrower needs to pay. Problems arise when the credit quality of the resulting security becomes indiscernible: it was impossible for even the most sophisticated of investors to fully understand these complex investments.

Rating Agencies and CDSs

Investors relied on rating agencies to understand the credit quality of MBSs, but it turns out that the rating agencies were as clueless as the rest of us. They were assigning their highest credit rating, AAA, to securities that should not have even been investment grade. Bankers who were structuring these CDOs looked to companies like AIG to guarantee the creditworthiness of the product, which is insurance against the default of the debt instrument. This form of insurance, called a Credit Default Swap (CDS), would further solidify the high rating from the rating agencies. It was good business for all parties while the underlying asset prices continued to rise, but it was a disaster waiting to happen for the companies writing the insurance when the housing market turned south. When a company like AIG issues insurance on a MBS, it does not carry the same risk characteristics as insurance on, say, homes. If AIG writes thousands of homeowner's insurance policies, it knows that only a fraction of the policy holders will make claims on their insurance. However, when the housing markets turned south, nearly all CDOs backed by mortgages were negatively affected. Many CDOs defaulted, meaning companies like AIG were left with massive obligations to the holders of CDSs. It is as if *all* holders of homeowners' insurance policies made claims on their policies *at the same time*. This leads to an insolvent insurance company and a lot of angry policy holders. This is exactly the situation between AIG and the broader financial industry in late 2008 and early 2009.

Prices of credit default swap (CDS) contracts reveal the market's confidence in institutions' ability to remain solvent. The buyer of a CDS contract has the right to receive the par value of a company's bond in the event of a default, but the buyer has to pay the seller for this right. The buyer will be willing to pay more for this contract if the firm is more likely to default and less if the firm is less likely to default. To insure $10,000 worth of AIG's senior subordinated debt with a one-year maturity, investors were willing to pay an astounding $6,500 in July 2009 at the height of AIG's problems. CDSs are derivative contracts that are traded over-the-counter. Since these contracts are not recorded on a centralized exchange, price data is merely representative of the broader CDS market.

Figures 1-1 and 1-2 on the following pages show the CDS market for financial firms that played critical roles in the crisis. The graphs can be used as a reference as events are analyzed throughout this paper. Note on Figure 1-1 that there were three distinct periods where fear pervaded the markets, each with increasing intensity. Also note the gradual increase in this measure of fear in the marketplace during non-crisis periods through the end of the first quarter 2009.

Off-Balance Sheet Structured Investment Vehicles (SIVs)

Leverage was building throughout the entire industry, not just in the mortgage arena. Many banks set up Structured Investment Vehicles (SIVs), which were off-balance sheet shell companies that were allowed to buy MBS without effecting the regulatory capital requirements of the parent bank. SIVs raised short term capital called commercial paper to fund purchases of longer dated mortgage securities. The liabilities of these shell companies declined in value with the decline of the housing market, and their sources of capital - those who bought their commercial paper during the good times - vanished. The SIVs could tap funding through a lifeline from their sponsoring banks, so the parent banks' balance sheets were suddenly struck with losses from these supposed "off-balance sheet" companies. By 2007, $1.2 trillion of asset-backed commercial paper was outstanding, and the pension funds and money market funds that were regular buyers of the paper became reluctant to continue investing in the asset class. Because *some* of this paper was backed by opaque, toxic MBSs, investors tended to shy away from buying *all forms* of commercial paper. This meant that medium to large sized businesses that relied on commercial paper to fund their day-to-day operations were suddenly without funding.

Excess Leverage Strains the System

The economy was getting pounded, and the lion's share of the cause could be traced to the decline in home values. Excess household and corporate leverage magnified the problem. Many homeowners owned houses that they could not afford. Many corporations, in the financial sector especially, were using leverage to fund the purchase of illiquid assets that would juice returns. By the end of January 2008, the Federal Funds Rate had been slashed to 3%. Fed Chairman Ben Bernanke went so far as to call an emergency session between regularly scheduled Federal Open Market Committee meetings to cut their target rate by 75 basis points. In February, the Bush Administration passed a $150 billion stimulus representing 1% of GDP that centered on tax rebates for all Americans. In February 2008, the housing market claimed a victim in the UK when the mortgage lender Northern Rock was nationalized by the UK government following a run on the bank.

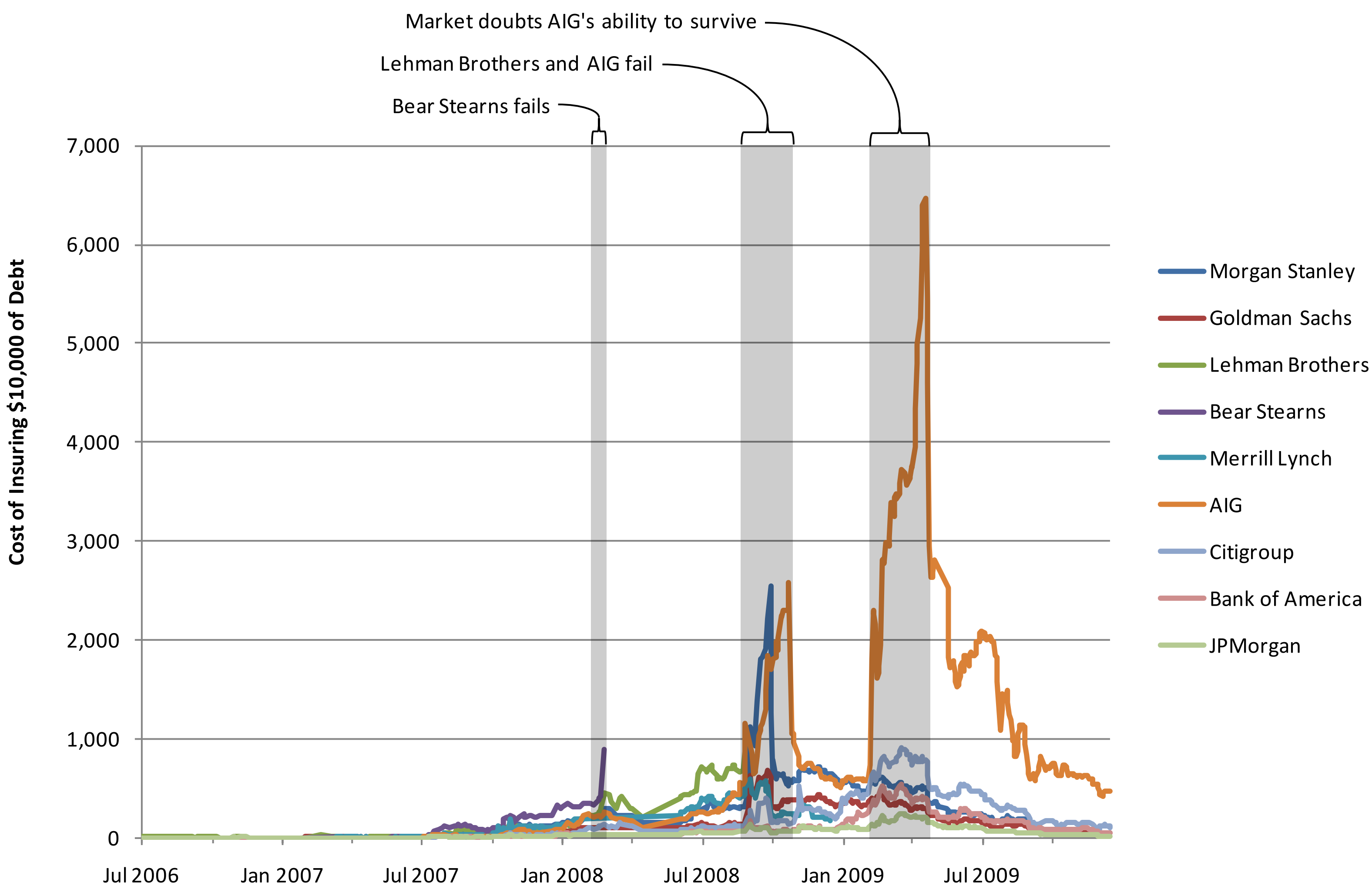

Figure 1-1 Credit default swap prices for select firms from July 2006 to January 2010. (Source: Bloomberg)

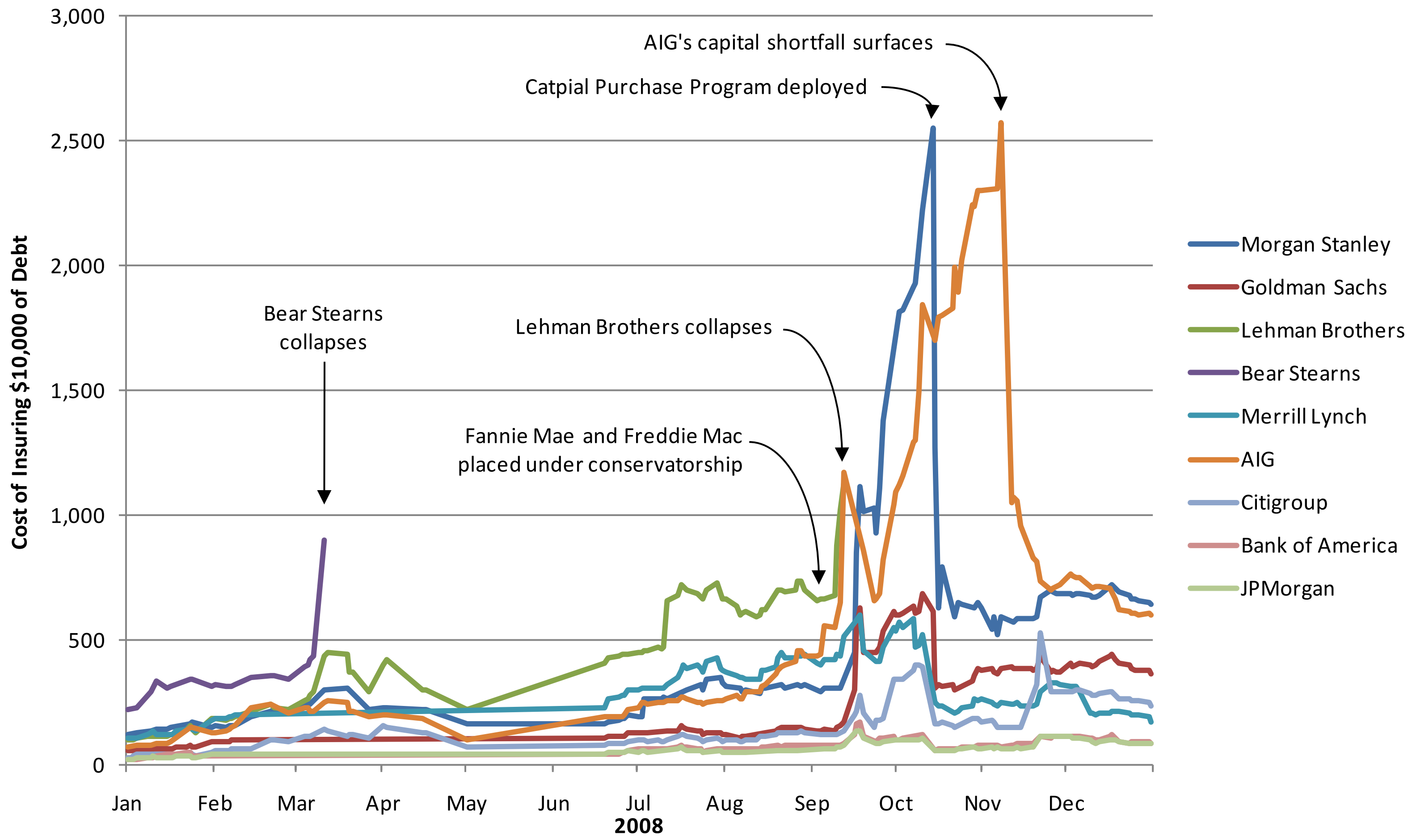

Figure 1-2 Credit default swap prices for select firms in 2008. (Source: Bloomberg)

Chapter 2. Bear Stearns (March 2008)

Major banks and other financial institutions suffered losses from off-balance sheet items such as mortgage-backed securities and collateralized debt obligations. Buyers of these securities vanished, prompting liquidity concerns at Bear Stearns. Bear Stearns was especially vulnerable, being the smallest of the big five investment banks and having considerable exposure to MBSs.

Dealing with the Crisis: The Government's Dilemma

Crisis struck the firm when the investment bank's counterparties overwhelmed Bear Stearns with a run on the bank, depleting Bear's capital from $12 billion to $2 billion in less than 24 hours. Bear Stearns, an investment bank, was at a disadvantage to commercial banks as defined by New Deal Era legislature called the Glass-Steagal Act. Commercial banks, because their asset base is comprised of consumer deposits, enjoyed many more protections from collapse than did a standalone investment bank. Since Bear Stearns was a standalone investment bank with no commercial deposits, the government had no mechanism in place to rescue the firm in the event that the firm was insolvent. However, the government was faced with an unprecedented problem. Because of the inter-connectivity between Bear Stearns and other financial titans, it was evident a failure of Bear Stearns threatened to bring down the broader financial system. The undesirable long-term effects of moral hazard are evident when government intervention ultimately promotes similar risky behavior. After learning of a Bear Stearns bailout, other investment banks will assume the government will absorb a significant portion of their downside should their bets go bad, so they take on more risk to make increase their return in the short term.

Justifying a Bailout I: The Domino Effect

Bear Stearns had potential destabilize the broader system of interconnected banks. Bear has important counterparties beyond its shareholders and bondholders. It is a major trading partner with all of the important financial players, many of whom were beginning to question the creditworthiness of Bear Stearns in the first quarter of 2009. This set off a chain of events. To settle trades in the event of bankruptcy, Bear's trading partners raced to settle trades before Bear ran out of cash. With Bear Stearns scrambling for cash to settle trades with their counterparties, they sold assets at fire-sale prices, driving down asset prices which further exacerbated the problem. Falling asset prices caused similar credit concerns at other firms. These firms feared that they would have similar liquidity problems, need to quickly unload assets to meet liquidity requirements, and this action would further drive down asset prices. Because of the catastrophic consequences of the government's inaction, the concern of moral hazard proves to be overemphasized. The risk of invoking the domino effect (also referred to as a downward spiral) can be avoided with enough foresight and clever regulation. The government needs to focus on ways in which they can bolster confidence *when,* not *if,* similar situations arise in the future.

Justifying a Bailout II: A Crisis of Confidence

At its core, the financial system relies solely on confidence – a psychological factor. Without confidence in the system, pieces start to fall apart at breakneck speed. Lenders need to have the confidence that banks will return their money. Otherwise, would-be lenders would refuse to lend. If every lender in the system developed this mentality, credit would dry up and the financial system - even the broader economy - would grind to a halt. This is precisely what happened for a brief period in the systematically important repo market and the commercial paper market. Bear

Stearns' collapse itself might not have been preventable without government assistance, but mechanisms implemented by the Federal Reserve are designed to prevent this type of systematic crisis of confidence. Indeed, the Federal Reserve played an important role in injecting liquidity into critical markets throughout the crisis.

Getting Through the Weekend

With Bear's capital nearly depleted during the week of March 10, 2008, the government needed to hatch a plan to help the company avoid bankruptcy and make payments to its counterparties. To ensure Bear Stearns survived through the week without causing widespread market panic, the Federal Reserve, headed by Ben Bernanke, lent directly to Bear Stearns on Friday, March 14, 2008, the first time the Fed lent directly to an investment bank since the Great Depression. The parties involved in this decision – the Federal Reserve, the Treasury Department, and the SEC – were unsure of its legality, but government authorities did not delay for fear of market capitulation. On that Friday, the Fed lent Bear Stearns an undisclosed amount using JP Morgan, a commercial bank, as the syndicate.

Bear's Fate

The loan from the Fed gave Bear Stearns 28 days to find a solution to its woes. Confidence, the key ingredient to Bear Stearns' survival, was deteriorating quickly. The situation was indeed dire, even for the broader financial system. In a private call with Hank Paulson, the CEO of Goldman Sachs, Lloyd Blankfein, concluded that a collapse of Bear Stearns would be "apocalyptic." (Paulson 106) The Wall Street Journal reported that former Treasury Secretary Robert Rubin described the situation as "uncharted waters." The view was shared by top government officials as they scrambled to find solutions to problems with no historical precedent. The old tools for handling crises weren't suited for the 21st-century crisis, in which financial innovation had rendered many institutions not necessarily "too big too fail," but "too interconnected to be allowed to fail suddenly." (Sidel)

Just days after lending to the failing investment bank, the Fed facilitated a deal to rescue Bear Stearns to calm the markets. JPMorgan was the only suitor with deep enough pockets and able to consummate a deal with just a few days of due diligence. However, JPMorgan was unwilling to buy Bear Stearns without some help from the government. The Federal Reserve agreed to lend Bear Stearns $30 billion that was backed by a risky mortgage portfolio. The Fed, not JP Morgan, bore the risk of the loan backed by risky Bear Stearns collateral. This incensed the American public since taxpayer money was subject to losses on Bear’s portfolio of toxic assets. To appease these concerns, JPMorgan agreed to bear the first $1 billion of losses. This loan from the Federal Reserve sweetened the deal for JPMorgan, and they agreed to pay $2 a share for the ailing firm, a 98.7% discount to its 52-week high. This bid was subsequently raised to $10 per share two weeks later after Bear Stearns shareholders protested.

Chapter 3. The Calm Before the Storm (March 2008 – September 7)

With JPMorgan backing all of Bear Stears' trades, there was a collective sigh of relief from market participants. The government had demonstrated its ability to prevent Bear Stearns' collapse from spreading like wildfire throughout the financial system and into the broader economy. Following the panic and unprecedented government intervention, many believed the worst had passed, but some still feared more to come. To provide a meaningful boost to confidence in trading counterparties across the Street, the Fed agreed to open the discount window to all investment banks, the first such move since the Great Depression. This meant that for the first time since the 1930s, the Fed regulated standalone investment banks, a territory normally designated for regulation by the SEC.

The government could not rest since looming risks to recovery, such as falling home values and rising foreclosures, still plagued the economy and threatened the eventual stabilization of the financial markets. Many strategies were proposed to avoid future blow-ups in the financial sector and improve investors' confidence in banks' balance sheets. Some plans gave the government permission to buy toxic assets from big banks. Other plans offered insurance for MBSs, similar to the products offered by monoline insurers like Ambac and AIG. Other plans got to the root of the housing market by helping individuals refinance mortgages rather than entering into a costly foreclosure process. Debate over these issues remained largely unresolved until crisis struck that necessitated quick, decisive action.

Fannie Mae and Freddie Mac

Home ownership was indirectly encouraged by the government through government sponsored enterprises (GSEs) Fannie Mae and Freddie Mac. These companies played roles in inflating the housing bubble, but because of their vast importance to the housing market, they also caused great disruptions in the markets when they headed towards insolvency. The housing market was at the core of the financial crisis, and Fannie and Freddie were at the core of the housing market. It is therefore important to understand how these companies operated and why they existed.

Fannie and Freddie were set up during the New Deal Era and enjoyed the benefits of implicit backing by the government. Some investors went so far as to assume the two companies had *explicit* backing by the government since they were congressionally chartered companies that could borrow directly from the Treasury in emergencies. This government support allowed the companies to thrive. They earned money on the spread between their huge portfolio of mortgages and their low cost of capital - the result of their implicit backing of the government. At the height of the recent housing boom the two companies held $5 trillion of the total $11 trillion of mortgages on the market. Two thirds of their profit came from the spread on their huge portfolio of mortgages, while the other third came from selling insurance on mortgages that guaranteed timely mortgage payments and return of principal from millions of homeowners. (Paulson, 55)

Undercapitalization and Regulation

On the surface, it seemed that these companies were doing just fine. They were serving the social purpose of promoting home ownership, exactly as Congress intended. They were also performing very well because of their unique relationship with the government. Taking a closer look, however, the companies were a disaster waiting to happen. Undercapitalization and poor regulation eventually led to major problems at the two mortgage giants.

The companies were undercapitalized compared to commercial banks of comparable size. They were only required to keep a very low level of reserves. Of the $5 trillion of mortgage exposure on their balance sheets, only 2.5% needed to be equity. The rest was debt that was raised at rates near yields on comparable treasuries. It was widely believed that these two companies were among the safest financial institutions in the industry. In reality, they were highly leveraged just like the storied firms Long Term Capital Management and Lehman Brothers.

Fannie and Freddie were regulated by two agencies: the Department of Housing and Urban Development (HUD) and the Office of Federal Housing Enterprise Oversight (OFHEO). The former was in charge of ensuring the companies fulfilled their duty to promote home ownership. The latter, OFHEO, was in charge of overseeing their finances – and in dire need of reform. OFHEO was an ineffectual offshoot of HUD and did not wield the power necessary to reign in the GSEs. OFHEO failed to effectively regulate the companies' mortgage portfolios. Unsuccessful efforts were made in 2006 to pass GSE reform. By the time reform came in 2008, crisis had struck, and it was clear that reform was long overdue. As part of the Federal Housing Finance Regulatory Reform Act of 2008, the Federal Housing Finance Agency was established to regulate Fannie Mae and Freddie Mac by setting minimum capital requirements and overseeing their portfolio of mortgages.

The Road to Conservatorship

As conditions deteriorated at the GSEs, the nation began to realize that these companies were simply too important to fail. The two companies provided financial backing for nearly half of all mortgages on the market. A failure of the GSEs would wipe out trillions of dollars of value in the housing market, causing a great deal of financial firms to suffer the same fate as Bear Stearns. The Treasury, therefore, required robust authority to unwind the GSEs. As part of the Housing and Economic Recovery Act (HERA) passed in July, an unprecedented blank check was given to the Treasury to invest in the GSEs. This was extremely unpopular, especially for Republicans, since it had an air of socialism. Indeed, it was not a step in the right direction for capitalism: it gave the Treasury the power to take an unlimited equity stake in a shareholder-owned company. But because of the unprecedented circumstances, it was a necessary step to stave off disaster. The shareholder-owned/government-chartered structure of the GSEs had failed, and this temporary solution enabled the two companies to be nationalized until a longer term fix could be ironed out.

The dry powder given to the Treasury was meant to calm the markets' fears about a Fannie or Freddie collapse. The Treasury hoped to never have to use its newfound powers, but as the situation became direr as the months dragged on, it was became inevitable. The government placed the two companies into conservatorship under direct control of the government. The two companies were no longer allowed to lobby the government and they would be forced to shrink their massive mortgage portfolios. The headline from the Wall Street Journal on Monday, September 8, 2008 adequately captured the gravity of the government's move: "In its most dramatic market intervention in years, the U.S. government seized two of the nation's largest financial companies, taking direct responsibility for firms that provide funding for around three-quarters of new home mortgages." (Hagerty)

It was a race against the clock for the government to put the GSEs into conservatorship. The Treasury knew that storm clouds were looming in the distance. Lehman's earnings were due in mid-September and the results would be horrific.

Chapter 4. Lehman Brothers (September 8 - September 14)

The Beginning of a Perfect Storm

Since the collapse of Bear Stearns, the street had become jittery, and everyone was skeptical of their trading counterparties. Lehman had many of the same characteristics as Bear, so many investors, especially those in the hedge fund industry, prophesied the ultimate demise of Lehman Brothers. Investors were worried about Lehman's huge mortgage portfolio, and they accused the firm of hiding the truth about their losses by not marking-to-market their MBSs. The firm’s CEO, Dick Fuld, tended to protect the firm at all costs, even by bending the truth. The company was only 14 years old at the time of its collapse and was still headed by the same man. As Hank Paulson put it, "[Dick Fuld's] ego was entwined with the firm's. Any criticism of Lehman was a criticism of Dick Fuld." (Paulson 123) Hedge funds began to short sell Lehman's shares, adding fuel to fire the crisis of confidence. In a meeting with the Treasury and other heads of investment banks, Dick Fuld spoke of the hedge fund industry. His face "reddened with anger as he asserted, 'These guys are killing us!'" (Paulson 130) It was a slow and painful death. The extra time available to plan for its ultimate collapse was a blessing for regulators and other players in the financial industry who were vulnerable to damage from a collapse of Lehman. The extra time allowed regulators and other firms to draw up plans for a worst case scenario collapse of the firm. As Bernanke put it, "We can only hope that if Lehman goes, the market will have had a lot of time to prepare for it." The Street echoed the same mentality, as the Wall Street Journal reported on Friday that "Lehman's troubles have also been known for a while, giving market participants 'time to prepare.'" (Paletta)

Before the GSEs went under conservatorship on Monday, September 8th, the collapse of Lehman seemed to be a far-fetched premonition from hedge fund managers who were making bets that the firm's stock would continue to fall. When Lehman did collapse just one week later, the government scrambled to save the system. To the average American, it seemed that their government was tossing aside the capitalist system. The public wanted to know, *Why aren't these financial firms bearing the full downside for their irresponsible decisions?* On the surface, it appears that moral hazard was allowed run rampantly through the halls of Wall Street firms. On the contrary, the government and the financial industry did what needed to be done with the cards that had been dealt. Let’s take a closer look at the series of events that would forever change the face of American capitalism.

The Height of the Crisis: The Lehman Weekend

The backstopping of Fannie and Freddie's balance sheets by the government was designed, in part, to alleviate some of the pressure on banks’ balance sheets. It provided no reprieve for Lehman Brothers. Their balance sheet was weak and getting weaker, and everyone but the company's CEO had come to realization that the firm would not make it through the crisis. In a desperate attempt to calm the market's fears, Lehman CEO Dick Fuld released the firm's earnings earlier than planned. The earnings were horrific, but the firm also announced that it was selling a stake in its asset management unit and spin off roughly $30 billion of toxic assets. Investors were skeptical about the asset sale, and continued to hammer the stock. Lehman needed to find another way out of the mess. This time, the money was not going to come from the government because of a renewed emphasis on keeping moral hazard at bay. With no public money available to bolster their balance sheet, Lehman needed to find a private-sector solution. Lehman shopped around for a buyer, entering serious talks with Bank of America. Barclays was interested, but they were unlikely to complete a deal with speed to match the urgency of the impending crisis. Both buyers balked at Lehman's huge mortgage portfolio that carried grossly understated losses. This roadblock to a Lehman rescue could have been avoided if all major banks voluntarily agreed to save the entire system by making capital infusions in Lehman. A similar solution was proposed in 1998 to save the over-levered hedge fund called Long Term Capital Management (LTCM). Then, a consortium of banks banded together to buffer LTCM's capital levels in the spirit of saving the overall system from collapse.

The story gets even more interesting. On Friday, September 12, government leaders and CEOs representing all the major players on Wall Street convened in the New York Federal Reserve Building to devise a plan to unwind Lehman while causing the least market disruption. It had become clear at that point that Lehman wasn't going to last until Monday. As Tim Geithner and Hank Paulson saw it, there were three potential outcomes: (1) Lehman files for bankruptcy, (2) a consortium of banks buys Lehman to dispose of their assets over time, or (3) a consortium of banks buys the portion of troubled assets on Lehman's books that a potential suitor would not want. Scenario three was preferred to scenario two since three would be less costly for the consortium of banks. Scenario one needed to be avoided at all costs. Lehman, with roughly $600 billion in assets, was bigger and more interconnected with other firms than Bear Stearns (Paulson 181). Its collapse would result in utter chaos.

A private sector bailout raised important questions that threatened to derail the deal. All of the banks had weak balance sheets, and with the absorption of the worst parts of Lehman's book, everyone would be in even worse shape.

> "We must be responsible for our own balance sheet and now we're responsible for others'?" Goldman CEO Lloyd Blankfein asked Paulson and Geithner. "If the market thinks we're responsible for other firms' assets, that ups the ante." (Paulson 198)

The firms were also concerned about another blowup down the line requiring similar capital infusions. This problem was even more complex than the one posed a decade earlier with LTCM. Back then, the problem was largely contained to one firm. This time, the entire industry was under the same woes - to varying degrees - that were driving Lehman into bankruptcy.

Concern over moral hazard took precedence for Lehman when it was seemingly an afterthought for Bear. This is because three problems existed over the Lehman weekend that didn't exist during the Bear weekend. First, it was not clear that a buyer for Lehman would emerge by the time the firm went out of business to start the trading day on Monday. Without a buyer backing Lehman's trading positions, Lehman's counterparties would be saddled with heavy losses as the trades were unwound in bankruptcy court. Second, Lehman's balance sheet was in worse shape than Bear's at the time of its collapse. Bear had a $30 billion book of mortgage assets that was of high enough quality for the conservative Federal Reserve to use as collateral for a loan. Lehman, on the other hand, had a book of $37 billion of toxic assets with a fair market value of $27 billion. Any loan made against that collateral would realize an instant $10 billion loss. Third, the broader financial system was in a much more precarious situation. All financial firms were suffering to varying degrees; and two notable players, AIG and Merrill Lynch, were also on the verge of collapse.

At the eleventh hour on Sunday, September 14, Lehman’s last suitor at the table had declined to make a bid for the firm. Barclays was still in talks with the firm until the Financial Services Authority (FSA), Barclay's home regulator in the UK, blocked the deal from going through because of capital shortfalls.

A makeshift war-room atmosphere had emerged at the New York Federal Reserve, with industry leaders and government officials working around the clock to save Lehman. Bankruptcy became a certainty after the Barclays deal fell through, so the war-room then focused its energies towards ensuring a smooth market open the following day. Government officials won a hardfought victory over moral hazard by not offering the failing firm a lifeline, but this victory came at a high cost. On Monday, the Wall Street Journal reported, "The government's logic was that if investors were bailed out again, they would expect a bailout every time, and the so-called moral hazard would disappear, making people willing to take massive risks in the belief they would be saved." (Lobb)

A bit of good news came out of the weekend's frantic negotiations. Merrill Lynch, widely believed to be the next head to roll, was being bought by Bank of America. The acquisitive BofA CEO Ken Lewis agreed to pay $50 billion for the failing investment bank, a 70% premium over Merrill's market price. In retrospect, it is clear that BofA overpaid, but they gained the one coveted asset that really mattered to BofA: Merrill's retail stockbrokers.

Chapter 5. Lehman Brothers Aftermath (September 15 - September 17)

AIG

As hard as it is to believe, the crisis building at AIG dwarfed that of Lehman Brothers. AIG had a $1 trillion balance sheet, which doesn't even account for huge derivatives positions connecting it to nearly all financial entities. It was clear to government officials that a failure of AIG could not be absorbed by the financial system, but mounting problems were contributing to such a doomsday scenario. As previously discussed, AIG wrote insurance on the obligations backed by mortgages called credit default swaps or CDSs, which contributed to its liquidity problem. But yet another problem was weighing on the insurance giant. AIG had lent its low-yielding high grade bonds and bought high-yielding MBS, making money on the spread while MBS prices were rising. The trade backfired when the housing market turned and the MBS plunged in value.

By Tuesday, September 16, it became clear that AIG would need an $85 billion loan to satisfy liquidity requirements. The Federal Reserve stepped in to fill this temporary capital shortfall. The Fed’s loan was backed by AIG’s valuable insurance subsidiaries that could eventually be sold to pay off the government loan. In return for receiving this emergency funding, AIG conceded 79.9% of their equity ownership to the government. The growing presence of moral hazard was certainly increased with the bailout of AIG, however AIG was far too big and influential to be allowed to fail. The company should have never been allowed to take on so much risk, especially since it was so entwined across the Street. To explain the regulatory missteps, Ben Bernanke said that AIG was “like a hedge fund sitting on top of an insurance company" (Paulson 236).

Commercial Paper

Problems began to materialize in key markets that might have seemed mundane during non-crisis periods, but led to destabilizing effects in the broader system after the collapse of Lehman Brothers. The commercial paper market plays a key role in funding businesses' short term capital needs, but buyers began to vanish as investors' risk tolerance swung to historic lows. Institutional investors began to shy away from anything but the ultra-safe Treasury securities. Demand was so strong for Treasuries that on Wednesday, September 17, 3-month Treasury bill yields had briefly entered negative territory (see Figure 8-1). That means that investors were willing to forego any return and actually pay the government for the right to park their money in the safest asset class. With demand for commercial paper low, even the most credit worthy companies like GE found it difficult to roll over their commercial paper.

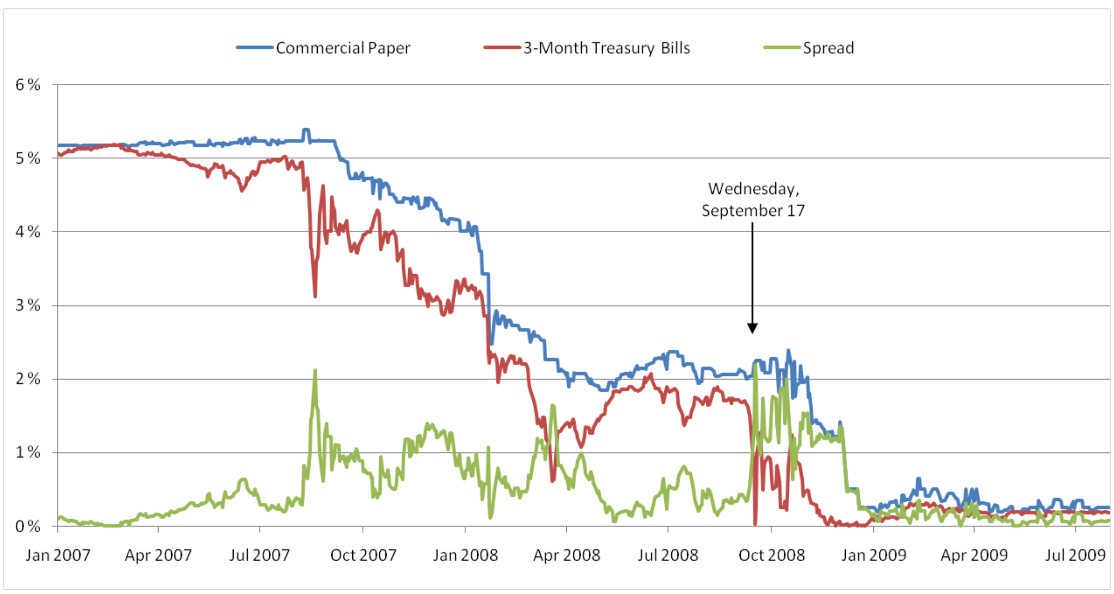

Figure 8-1 3-Month Treasury Bill Yields. (Source: Federal Reserve)

Repurchase Agreements

While liquidity dwindled for Main Street businesses, the flight to quality also led to liquidity concerns for interbank lending in what is known as the repurchase agreement or "repo" markets. In a repo transaction, a borrower receives cash while the lender receives a futures contract that is tied to the value of securities held by the borrower. Most repo transactions took place between financial firms and central banks, but these entities began to lose trust in their counterparties' ability to return the borrowed cash. The repo market served as the "plumbing" of the financial system, and its failure had far reaching consequences. Banks use repos to fund purchases of assets and use reverse repos to hedge against long positions, so all asset classes were affected by the liquidity of the repo markets.

Money Market Funds

Investors viewed money market funds to be nearly as safe as Treasuries, so the problems in this asset class speaks to the severity of the crisis and helps to explain the fear pervading the markets. Investors expected their assets in money market funds to be as liquid as cash, but some money market funds "broke the buck," meaning that they let their net asset value (NAV) fall below “par” or $1.00 per share. Investors began to withdraw cash from certain money market funds at a faster pace than money market funds could sell their securities. The Reserve Primary Fund, the first money market fund to break the buck since 1994, found themselves in this precarious situation primarily because of the vanishing liquidity from their once-liquid commercial paper holdings.

In one of the most important steps the government took to stabilize the system, the Treasury issued a guarantee for all assets in money market funds. This gave the market confidence that the crisis could in fact be contained by bold policy decisions from government leaders. This psychology acted as the market's lifeline while the Treasury Department struggled to get Congressional approval for a $700 blank check to bail out Wall Street.

Morgan Stanley

As one fire was put out, several other fires blazed that threatening to burn down the entire financial system. Morgan Stanley was viewed as the next weakest bank after Lehman, and was under siege by short sellers that threatened the firm's solvency. In private conversations with the Treasury Secretary Hank Paulson, Morgan Stanley CEO John Mack said he was not sure his firm was going to make it. It was widely believed that if Morgan Stanley failed, so would Goldman Sachs, the only other pure-play investment bank.

Short interest increased for Morgan Stanley as the crisis intensified. This is illustrated in Figure 9-1. Short interest is defined as the total amount of shares that have been sold short and have not yet been repurchased to close out the position. It is calculated by the major exchanges on a bi-monthly basis (Bloomberg). All else equal, short interest is directly related to trading volume. To normalize for the changes in volume, Morgan Stanley's short interest ratio is examined in Figure 9-2. The short interest ratio is computed by taking the short interest and dividing that by the average daily trading volume (Bloomberg). Since this is normalized for the trading volume of the stock, it can be compared against other firms. Bear Stearns experienced extraordinarily high short interest around the time of its collapse. Interestingly, Lehman Brothers experienced high short interest during the collapse of Bear Stearns, but not during its own collapse. Morgan Stanley experienced higher short interest during the Lehman collapse than Lehman itself, so Morgan Stanley was justifiably frustrated that the hedge funds were unfairly hammering its stock with short positions.

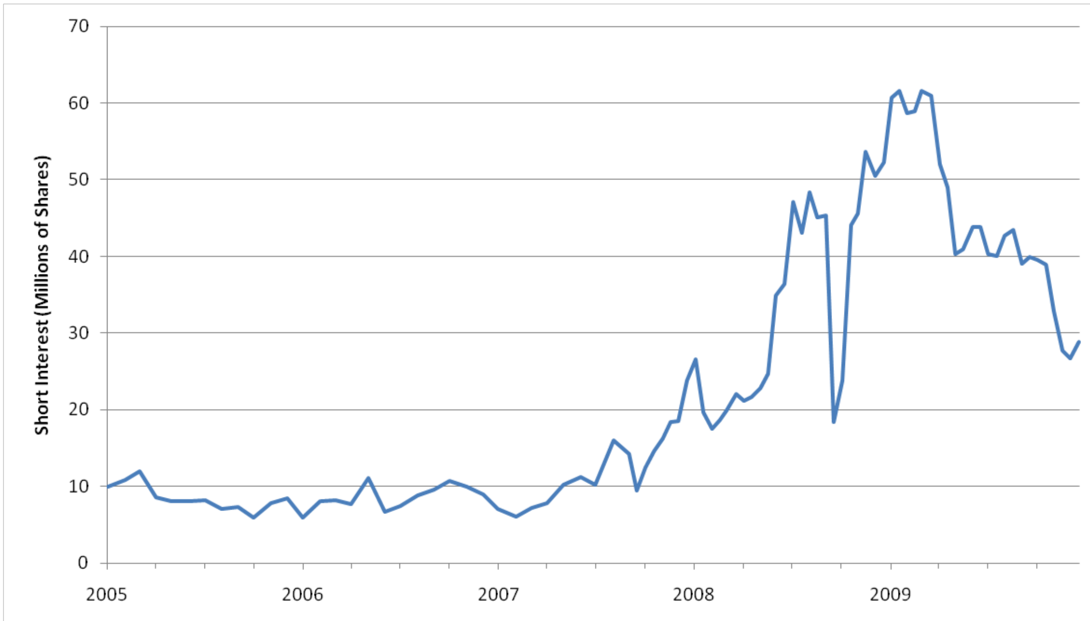

Figure 9-1 Short interest for shares of Morgan Stanley. (Source: Bloomberg)

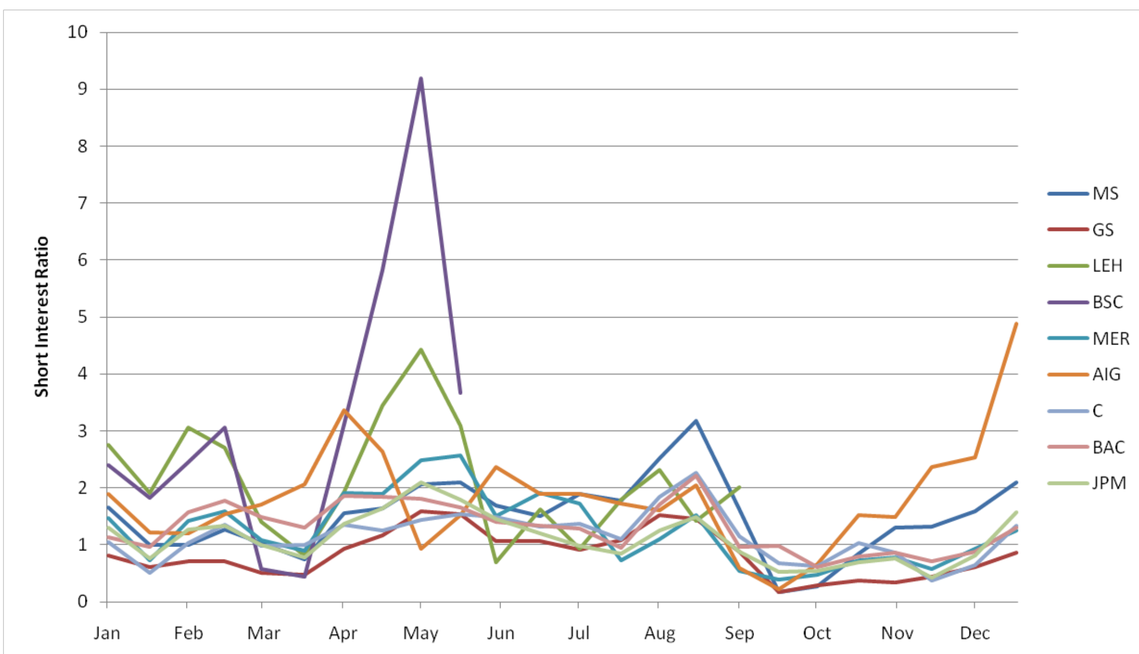

Figure 9-2 Short interest ratios. (Source: Bloomberg)

Washington Mutual

The weakness in the mortgage market claimed another financial titan: Washington Mutual. With $307 billion in assets, WaMu was the largest bank failure in US history. After filing for bankruptcy, WaMu found their white knight in JPMorgan who bought the firm at a fire-sale price of just $1.9 billion.

Wachovia

Depositors staged a run on the bank at Wachovia, the fourth largest bank with branches across the country. Although Citi and Wells Fargo were interested in buying the firm, Wachovia was on the brink of bankruptcy, and the government was drafting plans for bailing out the systematically important bank. Citi emerged with the first workable deal: they offered Wachovia $2.16 billion in stock and the FDIC agreed to guarantee losses beyond $42 billion on Wachovia's $312 billion in assets. A few days later, after initially walking away, Wells Fargo made a bold offer for Wachovia of $15.4 billion that did not require government assistance. This satisfied shareholders, got taxpayers off the hook for potential losses on Wachovia's loan portfolio, and infuriated Citi who claimed that they had an exclusivity agreement in their negotiations with Wachovia.

Chapter 6. Troubled Assets Relief Program (TARP) (October 3)

TARP's Conception and Passage through Congress

Government leaders Hank Paulson, Ben Bernanke, and Tim Geithner needed broader authority to handle the crisis. The Treasury Department asked Congress for an unprecedented $700 billion blank check to buy illiquid mortgage backed securities that were weighing on bank balance sheets. This shockingly large sum of money was meant to bolster confidence in the government's ability to handle the crisis, but it was not meant to be deployed in full. The plan was meant to help the broader economy by encouraging banks to lend to small businesses and individuals, however the public was outraged at what looked like a Wall Street bailout.

It was very important for the bill to be passed in a timely manner. The markets needed a strong shot in the arm to avoid a collapse that was widely feared to be right around the corner. If congress failed to let this very important piece of legislation through, the markets would be even more likely to collapse than if legislation was never even introduced. Because this legislation was widely unpopular among the American public, politics became an important factor to the survival of the financial system. Tempers flared on the hill as partisan bickering reached appalling levels. Middle ground was especially hard to reach because of a few key factors: it was an election year, democrats held a slight majority in the House and Senate, and the Bush administration was widely unpopular.

The Treasury wanted to have ready access to enough money to purchase toxic assets from banks with rules that would encourage participation from banks. Such authority was not granted without tough concessions. The following is a breakdown of key issues concerning the legislation:

- *Compensation:* The public was outraged over what was perceived as a "Wall Street bailout," so compensation restrictions at participating banks were introduced as part of the bill. This complicated matters since this would make unhealthy banks less likely to participate, thereby rendering the legislation useless. The move was highly controversial because it gave the government unprecedented authority to affect private sector decisions. The final version of the bill contained tough restrictions on “golden parachutes” and the amount of compensation that could be paid in cash to executives.
- *Timing:* The Treasury wanted enough funding to give the markets confidence, but congress was reluctant to give the executive branch such power towards the end of a highly unpopular administration. Congress decided to release the funds in two traunches, giving the Bush administration access to $350 billion and left the other $350 billion to be deployed by the next administration.
- *Oversight:* Congress was hesitant to give one man, Treasury Secretary Hank Paulson, a $700 billion blank check. Layers of oversight were created to ensure the effective deployment of the funds, however the Treasury retained much flexibility to do as they saw fit with the funds.
- *Taxpayer Protection:* With the government buying so many toxic assets from banks, taxpayers would be funding the purchase of highly risky securities subject to write-downs and defaults. This downside risk was hard to accept without potential upside. Provisions to the bill allowed the government to receive warrants for common stock of TARP participants, which allowed taxpayers to benefit from TARP's positive effects on the financial industry.

On Monday, September 29, TARP failed to pass the House by a margin of 13 votes. The S&P 500 fell 8.8% that day, its worst drop since the crash of October 1987. Sheila Bair of the FDIC threw the market a lifeline on Tuesday by preventing widespread bank runs: the FDIC increased deposit insurance from $100,000 to $250,000. On Friday, October 3, the Emergency Economic Stabilization Act of 2008 finally passed, giving the Treasury authority to deploy $700 billion to save the financial industry from collapse and the ensuing broader economic ramifications.

Implementation of a Leveraged TARP

According to the Treasury's original plan presented to Congress, TARP would buy toxic assets that were weighing down banks balance sheets and making them reluctant to lend. Conditions deteriorated so quickly even as the legislation was passed that the asset-buying plan appeared to not go far enough to lubricate the credit markets. The proposed auction system of the government buying MBSs would take too long to be implemented for it to serve as the emergency lifeline it was designed to be. A different plan was drafted that could be more impactful and more swiftly implemented. The government would use its $700 billion blank check to inject equity into the nation's weakest banks in what became known as the capital purchase program (CPP). The banks would then have stronger capital cushions upon which to lend. Thus, TARP became leveraged.

Although the revised game plan was more effective at calming the markets, it came with a whole host of other problems. Congress and the American were outraged, feeling as though they had been lied to by the Treasury. The plans changed shortly after the passage of the bill, which made it appear that the Bush Administration attempted a bait and switch. Many cried foul as the equity capital injections looked like the nationalization of the firms. To counter this perception, the government invested in preferred shares. Therefore, the banks were stabilized as their capital ratios improved and the taxpayer was protected with high dividends and seniority over common shareholders.

Despite their dire straits, firms were not lining up to receive capital injections from the government. The market perceived any firm in need of government assistance as too weak to survive the crisis. To avoid this stigmatism against taking TARP funds, the Federal Reserve chose systematically critical banks to be the first recipients of TARP. These nine chosen institutions controlled over 50% of the US consumer deposits. Of the $250 billion initially allotted for the CPP, $125 billion went to these big banks. The list included commercial banks JPMorgan, Citigroup, Bank of America and Wells Fargo; investment banks Goldman Sachs and Morgan Stanley; and clearinghouses Bank of New York Mellon and State Street Corporation. The banks agreed to terms that were friendly to the taxpayer in the spirit of saving the entire system from collapse. On the news, the Dow posted its biggest point gain ever, jumping 936 points to 9,388.

Beyond the $250 billion allocated to the CPP, TARP funds were used on an ad-hoc basis when crises surfaced. With AIG's third quarter 2008 earnings announcement of a $24.5 billion loss, the problem at the firm became one of solvency instead of just liquidity. AIG received a capital injection of $40 billion from the TARP program. Twenty billion of TARP was used to back a program called the Term Asset-Backed Securities Loan Facility (TALF) that was designed to put $200 billion of the Fed's balance sheet to work in the asset-backed securities markets. As the capital positions of Citigroup and Bank of America continued to deteriorate, each firm required an additional $20 billion of funds from TARP in what was known as the Targeted Investment Program. GM and Chrysler were bleeding cash and faced liquidity problems of their own, so the Treasury agreed to loan the automakers $18.4 billion of TARP to bolster their balance sheets.

Chapter 7. Lawrence Summers' Guidelines

Lawrence Summers, former Treasury Secretary and current Director of the National Economic Council for Barack Obama, proposed that policy makers should consider these three questions before making decisions concerning moral hazard:

> First, are there substantial contagion effects? Second, is the problem a liquidity problem where a contribution to stability can be provided with high probability or does it involve problems of solvency? Third, is it reasonable to expect that the action in question will not impose costs on taxpayers? If the answers to all three questions are affirmative, there is a strong case for public action.

Summers wrote these guidelines in 2007 before the financial crisis materialized, but it serves as a relevant framework for weighing the long-term evil of moral hazard and short-term evil of an economic downturn. There are four major government bailout decision nodes during the crisis: Bear Stearns, Lehman Brothers, AIG, and the broader financial system through TARP. Here are the results of Lawrence Summer's test:

	Bear Stearns	**Lehman Brothers**	**AIG**	**Financial Industry**
Were there substantial contagion effects?	Yes	Yes	Yes	Yes
Problem of liquidity or solvency?	Liquidity	Both	Both	Both
No cost to taxpayer expected?	Yes	No	Unknown	Unknown
Summers: Should there be a bailout?	Yes	No	Yes	Yes
Reality: Was there a bailout?	Yes	No	Yes	Yes

Summers' guidelines are surprisingly accurately in predicting the presence of government assistance. All bailouts threatened to impose a cost on the taxpayer, but each to varying degrees.

At the time of the Bear Stearns bailout, the firms was viewed as unlikely to impose costs to taxpayers because it was experiencing problems of liquidity, not solvency. At the time of the Lehman collapse, the firm had a known $10 billion capital shortfall. For AIG and the financial industry, the government knew the taxpayer could be saddled with losses, but the contagion effects for the broader economy were too great to ignore.

The government wants the private sector to be responsible for the downside risks of their decisions, but the private sector may be blinded by the public sector bailouts. Such a mindset could prove to be foolish when the government does not offer the same level of support during the next crisis. During the credit crisis that culminated in 2008, government leaders were faced with unprecedented challenges in staving off far-reaching disasters. This crisis cultivated a perfect storm of deception, greed and ignorance. Some mutation of this perfect storm will resurface in a century or so, but until then, moral hazard has been kept at bay.

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