

# The Advantage of Failing First: Bear Stearns v. Lehman Brothers

Sean Kensil and Kaitlin Margraf

*The collapse of the housing market coupled with the largest government intervention in the economy in US history led to a radical reorganization of the investment banking industry in 2008 culminating in the failure of two major US investment banks: Lehman Brothers and Bear Stearns. This paper examines why Lehman Brothers was forced into bankruptcy, while Bear Stearns received a government bailout. An analysis of market factors and the financial strength of these two firms and their peer group demonstrates that the problems these banks faced were shared throughout the industry, despite the different fates of the five major standalone investment banks. This paper finds the different treatments of Lehman compared to Bear Stearns by both the government and capital markets were not justified given the financial conditions of the companies. Both investment banks were very similar in terms of financial strength, and Bear Stearns was arguably in worse condition. The US government made efforts to broker a solution on behalf of Lehman Brothers, but ultimately chose to allow the firm to fail in order to prevent the spread of moral hazard. Thus, Lehman's failure was caused more by unfortunate timing and the government's desire to discourage moral hazard than by its financial characteristics. Ultimately, it seems Lehman's failure cannot be entirely explained by the firm's own assets or poor decisions, but rather Bear Stearns' advantage of being the first to fail and the government's subsequent decision to prevent the spread of moral hazard.*

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*Sean Kensil was an undergraduate student at the McDonough School of Business at Georgetown University in Washington, DC. Kaitlin Margraf was an undergraduate student at the McDonough School of Business at Georgetown University in Washington, DC.*

■ In 2008, the Dow Jones Industrial Average (DJIA) declined 33.8% in its worst year on record since the Great Depression. The US economy was fundamentally transformed as the housing market collapsed, equity markets crashed, and the largest bankruptcy in US history was declared. The decision by the Federal Reserve (Fed) to provide government support for JP Morgan's acquisition of Bear Stearns (Bear), but to withhold support to Lehman Brothers (Lehman) six months later, had a profound impact on the global economy. This paper compares and contrasts the internal environment at these banks that led to their failures by examining each firm's culture and upper management, asset quality and valuation, and reliance on short-term funding. The general market climate and effect of market paranoia are also examined to understand the legitimacy of market concerns about each firm's health. Lastly, the decisions and frameworks that led to each firm's failure on both the part of the government and private market are analyzed to judge their accuracy at the time. The focus is on the events leading up to each bank's failure that influenced government and market decisions, but not information revealed after their collapses. Ultimately, the inconsistent policy response by the federal government after the rescue of Bear Stearns, Fannie Mae, and Freddie Mac amplified the deleterious effects on financial markets, as the expectation the government would save a strategically important firm was created.

Ultimately, the financial situation at Lehman Brothers was not fundamentally worse than that of Bear Stearns or any other major investment bank. The inconsistent policy response that forced Lehman into bankruptcy was based upon a desire to prevent the spread of moral hazard and to prevent political controversy. The disadvantage of not being the first firm to fail was that Lehman was made an

example of and allowed to fail despite similar conditions and its strategic importance in the global markets. Further, the private market's intense scrutiny of the stock and ensuing market paranoia were not entirely justified by the financial condition of the Lehman Brothers, but rather overleverage and poor asset quality by the entire industry.

The remainder of the paper is organized as follows. Section I discusses the firm culture and upper management characteristics that led these two firms to failure. Section II analyzes balance sheet and financial statement issues including leverage, asset quality, derivatives and reliance on short term funding that caused instability and crisis at the firms. Section III analyzes the effect of the debt and equity markets on the firms and the corresponding effect of Lehman and Bear's failures on the markets. Section IV analyzes the events and decisions leading up to the bailout of Bear Stearns and bankruptcy of Lehman Brothers from both the perspective of the firms themselves and from the government. The final section provides a summary of our conclusions and discusses the impact of other factors such as timing and politics on the respective failures.

## I. Firm Culture and Upper Management

Both Bear Stearns and Lehman Brothers had firm cultures that valued excessive risk-taking, and senior leadership failed to head key warning signs that could have helped prevent failure or mitigate damage. Bear Stearns was known for its cutthroat culture that used anti-establishment trading, employee hiring, and decision-making strategies. Although Bear had been in many difficult positions before, its scrappy mentality allowed the firm to escape failure repeatedly (Stowell, 2009). Past successes in difficult economic times seemed to instill a false sense of confidence and bravado in management that led it to take risky bets. Their hiring was unique and in line with their hardworking trader's culture. Alan "Ace" Greenberg, former Chairman of Bear Stearns, said, "If somebody with an MBA degree applies for a job, we will certainly not hold it against them, but we are really looking for people with PSD degrees," meaning poor, smart, and with a deep desire to become very rich (Stowell, 2009). The deep desire to become very rich, coupled with an aggressive culture, led Bear Stearns to employ extremely risky trades and to rely on the volatile bond market for the bulk of their revenues.

As the overriding firm culture was one of aggressiveness and overconfidence, Bear's failure can also be directly linked to the poor decisions and weak oversight of upper management. In July 2007, two of Bear's hedge funds were on the brink of collapse as a result of their toxic mortgage holdings. When numerous positions yielded losses because of the increase in defaults, consistent with their aggressive culture, Bear's managers doubled down on their positions

and increased leverage in an attempt to make up for losses. Proving unsuccessful, the hedge funds spun into failure as investors rushed to redeem their money. The collapse of Bear's hedge funds also reflected Bear's proud, aggressive attitude as it refused to inject any of its own capital to save the funds. As Bear's hedge funds failed, chief executive officer (CEO) James Cayne was playing in a bridge tournament in Nashville, Tennessee without access to phone or email (Kelly, 2007). Cayne was accused of showing poor leadership in multiple *Wall Street Journal* articles that raised concerns among investors and creditors about the quality of the company: "As Bear's fund meltdown was helping spark this year's mortgage market and credit convulsions, Mr. Cayne at times missed key events" (Kelly, 2007). The Board of Directors of Bear Stearns was also inadequately prepared to guide the company in a time of crisis. The Corporate Library (2008), which rates firms on the quality of corporate governance, gave Bear Stearns a grade of a D before the crisis, noting red flags such as over-tenure with four of their Board Members having served for over twenty years.

Exhibiting a similar culture to that of Bear Stearns, Lehman Brothers was known throughout Wall Street as one of the most aggressive investment banks. They had a reputation for high profits, big risks, and huge egos. Central to the firm's identity was CEO Dick Fuld, who was characterized as "intensively aggressive" and a major factor in the firm's decision to take on significant risk in order to compete with other banks (Stewart, 2009). He was respected for bringing the firm success but also intimidating, as his stare "froze recipients with fear" (Onaran, 2009). In 2004, Fuld appointed his closest advisor and confidante at the firm, Joe Gregory, to become Chief Operating Officer. Fuld and Gregory discouraged discussion of the firm's operations and strategy and some insiders even said that Gregory "[made] it his mission to keep Fuld's life uncomplicated by debate" (Onaran, 2009). This stifling atmosphere discouraged discussion of Lehman's risk and contributed to the problems leading up to its bankruptcy. Erin Callan, Lehman's Chief Financial Officer from December 2007 to July 2008, was also a controversial management figure. The decision to promote her to chief financial officer (CFO) was criticized both inside and outside of the firm for her lack of background in accounting or treasury. Investors feared she did not have the necessary experience for such a critical job, which became a major distraction in the months prior to Lehman's bankruptcy.

Lehman's Board of Directors was also poorly prepared to deal with risk management or corporate strategy. The Corporate Library gave Lehman a D prior to the crisis, the same rating that they had given Bear Stearns, and lowered it to an F in September 2008. Some of the concerns raised in the Financial Crisis Inquiry Report (2010) were that Lehman's Board had "an actress, a theatrical producer, and an admiral,

**Figure 1. Leverage Ratios and Percent of Level 3 Assets**

	<b>BSC</b>	<b>LEH</b>
<b>Leverage Ratio</b>		
Quarter of Failure	32.8	24.3
Previous Quarter	32.8	31.7
2 Previous Quarters	30.5	30.7
3 Previous Quarters	29.7	30.3
<b>Average</b>	<b>31.5</b>	<b>29.3</b>
<b>% of Level 3 Assets</b>		
Quarter of Failure	9.4%	6.5%
Previous Quarter	9.9%	5.4%
2 Previous Quarters	5.1%	6.1%
3 Previous Quarters	4.8%	5.3%
<b>Average</b>	<b>7.3%</b>	<b>5.8%</b>

and not one person who understood financial derivatives.” Thus, the board was in no way prepared to understand or manage the complex risks the firm faced heading into the financial crisis.

## II. Financial Characteristics

### A. Leverage

One factor that caused investment banks to struggle as the economy faltered was the vast amount of leverage the industry took on in the years before the financial crisis. Lehman’s leverage ratio at the time of its failure was in line with the industry average and actually lower than the leverage ratio of Bear Stearns at the time of its bankruptcy. This suggests that politics and firm culture played a stronger role in the decision to have an orderly bankruptcy than the Lehman’s financial position. Leverage ratios (total assets/stockholders equity) for the five major investment banks increased on average from 21.7x in 2003 to 30.2x in 2007. This increase was precipitated by the Securities and Exchange Commission (SEC) quietly eradicating the net capital rule in 2004, which previously had placed limits on debt to equity ratios the banks could carry and employed more lax alternative leverage ratios to regulate them. This allowed the banks to increase leverage in their capital structures in order to make large investments into risky assets such as subprime mortgages and to boost their profits and returns on equity.

At the time of their failures, Bear and Lehman had similar leverage ratios. Bear Stearns had a high leverage ratio of 32.8x at the end of 2007 and in the 1<sup>st</sup> quarter of 2008, indicating that its capital structure was extremely dependent on debt (Figure 1). For every \$32.8 of assets, Bear had \$1 of equity and \$31.8 of liabilities. Similarly, Lehman had a high

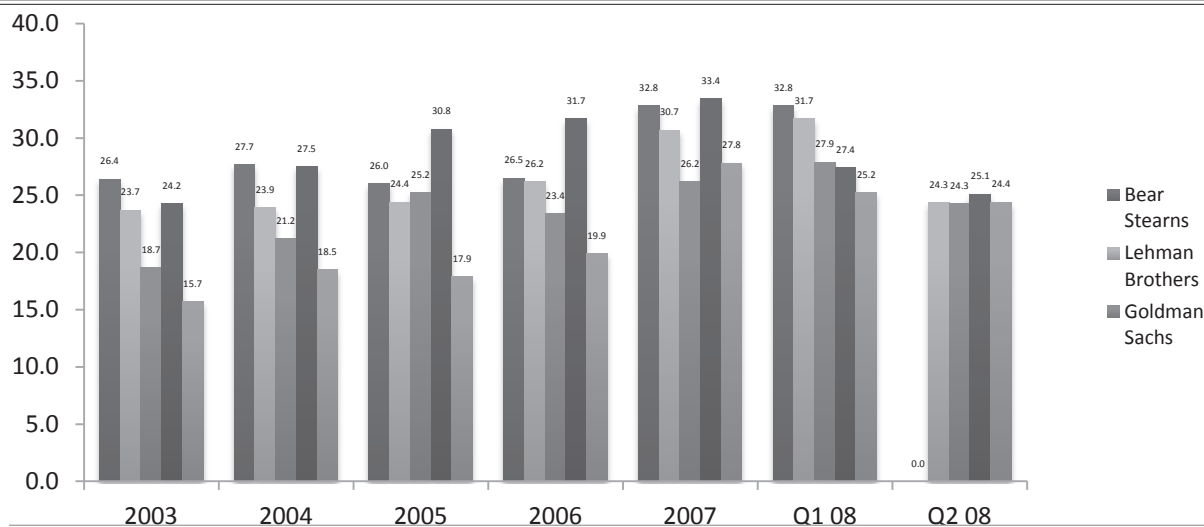
leverage ratio peaking at 31.7x in the first quarter of 2008. For every \$1 of equity Lehman had \$31.7 of assets and \$30.7 of liabilities in the 1<sup>st</sup> quarter of 2008. This implies that a hypothetical 3.2% drop in the value of total assets would erase Lehman’s shareholder’s equity rendering it insolvent, providing the drop in assets was not matched with a corresponding decrease in liabilities. This demonstrates how risky this type of leverage is, particularly in a period where real estate and other asset values dropped precipitously.

Figure 2 shows the leverage ratios of Bear and Lehman were not notably higher than those of the other three major investment banks. In the 1<sup>st</sup> quarter of 2008, Goldman Sachs had a leverage ratio of 27.9x, Morgan Stanley had a leverage ratio of 27.4x, and Merrill Lynch had a ratio of 25.2x. While Lehman’s leverage was initially in line with the industry average, it was slower to deleverage than other banks such as Morgan Stanley who dropped their leverage ratio from 33.4x in the previous quarter. Ultimately, while some banks were traditionally more leveraged than others, the entire industry’s business model in the decade before the crisis depended on excessive leverage. Ultimately, leverage left no room for error at any of these banks due to the small amount of capital. However, Bear Stearns actually had a higher leverage ratio than Lehman, despite it receiving government assistance.

### B. Illiquid Assets

Both Bear Stearns and Lehman Brothers were hobbled by balance sheets riddled with illiquid and hard to value assets. Despite early signs that the mortgage market was wavering, Bear Stearns expanded its mortgage business, doubling the number of mortgages they underwrote from 2005 to 2006. Despite early losses in 2006 of \$3 million relating to defaults

Figure 2. Investment Bank Leverage Ratios 2003-2008



on mortgages, Bear assumed the setback would be temporary and persisted in the mortgage market (The Financial Crisis Inquiry Report, 2010). As the housing market began to deteriorate and subprime defaults increased, Bear took steps to reduce their high exposure to mortgage-backed assets in order to respond to increasing market pressure over these positions. On November 14, 2007, Bear wrote down its mortgage-related assets by \$1.2 billion, which led to a \$1.9 billion third quarter loss. Regulators grew concerned about Bear's intense concentration in the mortgage market, noting specifically the \$13 billion in adjustable-rate mortgages on Bear's balance sheet waiting to be securitized, which were more than 30 times the value of its assets (The Financial Crisis Inquiry Report, 2010).

Consequently, there was internal disagreement as to how to deal with its large portfolio of mortgage holdings as seen in Figure 3. Bear's traders wanted to remove any remaining mortgage positions (Kelly, 2008). Alan Schwartz, Bear's new CEO, feared that selling mortgage positions would send a negative signal to the market. He also feared it would increase losses as the market for these securities was relatively illiquid, forcing them to sell at a discount. Despite hedges such as the "chaos trade" that bet on indices backed by subprime mortgages, Bear's overall exposure to mortgage securities proved to be too large. As fears about the health of Bear leaked to the markets, lenders demanded higher collateral and refused to lend against Bear's illiquid assets. The higher collateral calls forced Bear to sell assets at fire sale prices and take additional losses. Even as JP Morgan, their eventual acquirer, examined Bear's books, "they balked at the firm's precarious position and the continued size of its mortgage holdings" (Stowell 2009). On December 20, 2007, Bear reported disappointing fourth-

quarter results that were the company's first quarterly loss in its history. The firm posted a meager return on equity of 1.98% compared to an average of 15.23% the four previous years. The deficit was due to a drop in the value of their mortgage inventory, as well as the bond division losing \$1.5 billion for the quarter.

Lehman faced a similar issue as its balance sheet was dominated by illiquid assets. Many of these assets were from the subprime mortgage market with questionable value. Lehman's inventory of mortgage-backed securities greatly exceeded its shareholders equity and the firm tried to reduce their mortgage-backed security (MBS) portfolio as the real estate market plummeted. Lehman reduced their ratio of mortgage and asset backed securities over shareholders' equity from a high of 4.0 in the 3<sup>rd</sup> Quarter of 2007 to 2.8 in the 2<sup>nd</sup> quarter of 2008.

Lehman was forced to take significant write downs on its mortgage assets in 2008: \$1.8 billion in the 1<sup>st</sup> quarter, \$4.1 billion in the 2<sup>nd</sup>, and \$5.6 billion in the 3<sup>rd</sup>. Despite these write-downs, many insisted Lehman seriously overvalued its assets and that their write-downs did not reflect the steep decline in the real estate market. Merrill Lynch CEO John Thain, after reviewing Lehman's assets, said they were overvalued by \$15-\$25 billion (The Financial Crisis Inquiry Report, 2010). Bank of America CEO Ken Lewis, who had considered acquiring Lehman, considered their assets overvalued by \$60 to \$70 billion (The Financial Crisis Inquiry Report, 2010). The valuation was pivotal as the overvalued assets were far greater than the firm's equity. Ultimately, Lehman began to search for a buyer for its real estate assets in order to rid itself from its toxic mortgage assets.

**Figure 3. Ratio of Mortgage Positions to Shareholder's Equity**

		Bear Stearns	Lehman
<b>Quarter of Failure</b>	<b>Mortgage and Asset Backed Securities</b>	\$38,186	\$72,461
	<b>Shareholders' Equity</b>	11,896	26,276
	<b>Ratio of MBS and ABS to Equity</b>	<b>3.2</b>	<b>2.8</b>
<b>1 Quarter Prior</b>	<b>Mortgage and Asset Backed Securities</b>	46,141	84,609
	<b>Shareholders' Equity</b>	11,793	24,832
	<b>Ratio of MBS and ABS to Equity</b>	<b>3.9</b>	<b>3.4</b>
<b>2 Quarters Prior</b>	<b>Mortgage and Asset Backed Securities</b>	55,937	89,106
	<b>Shareholders' Equity</b>	13,000	22,490
	<b>Ratio of MBS and ABS to Equity</b>	<b>4.3</b>	<b>4.0</b>
<b>3 Quarters Prior</b>	<b>Mortgage and Asset Backed Securities</b>	52,164	88,007
	<b>Shareholders' Equity</b>	13,274	21,733
	<b>Ratio of MBS and ABS to Equity</b>	<b>3.9</b>	<b>4.0</b>
<b>Average</b>		<b>3.8</b>	<b>3.5</b>

## C. Commercial Real Estate

One area where Lehman had greater and riskier exposure than Bear was commercial real estate, in which Lehman was an industry-leading broker and investor. Lehman's management saw the real estate downturn of 2006-2007 as a "countercyclical growth opportunity" and invested more capital in the risky sector similar to Bear Stearns (Field, 2010). Lehman had over \$39 billion worth of exposure to commercial real estate on its balance sheet for the 2007 fiscal year. As the firm's problems mounted, they reduced their real estate exposure to slightly under \$33 billion by the third quarter, but still had riskier real estate exposure relative to its competitors. The firm saw real estate as a way to take on proprietary investments and reach out to new clients. As real estate prices skyrocketed in the years before Lehman's bankruptcy, the company heavily leveraged itself to pursue these profitable but risky investments. Lehman's Global Real Estate Group had generated as much as 20% of the firm's profits in the decade prior to Lehman's bankruptcy (Leonard, 2009). In particular, upper management decided in 2006 to focus even more of the firm's capital into commercial real estate as it was more profitable than other business segments (Valukas, 2010). The firm rarely shied away from financing large deals and one industry broker described Lehman as the industry's "real estate A.T.M." (Pristin, 2008).

Lehman's Real Estate Group was able to securitize many of the bank's real estate investments, while also using bridge equity financing to finance a large portion of the transactions (Rosenbush, 2007). However, the bridge equity financing put huge risk on the bank's balance sheet if they could not

sell the stake or if the deal was unsuccessful. Lehman was heavily invested in two large and risky bridge financing deals: SunCal and Archstone Smith Trust, which would both become major signs of their failure as the large and overpriced investments quickly backfired when the real estate market dropped (Leonard, 2009).

## D. Derivatives

A significant area of risk for Bear was their derivatives portfolio. In addition to their significant mortgage-backed securities holdings, Bear had been increasing its exposure to complex derivatives over the years leading up to their failure. Their derivatives position in 2006 was \$8.7 trillion and by 2007 had grown to exceed \$13.4 trillion. As the credit crisis increased and subprime borrowers continued to default, Bear's mortgage assets significantly decreased in value. Rumors of illiquidity concerned derivative counterparties about Bear's ability to make payments, subsequently causing them to begin unwinding billions of derivatives trades with Bear. This is another area of distinction between Bear and Lehman, as Bear's exposure to derivatives was a notable area of alarm for Bear during the financial crisis. Lehman Brothers also had substantial risk in connection to derivatives contracts. At the end of 2007, they were counterparties to \$738 billion in derivatives contracts. This was a substantial increase from the \$535 billion in derivatives reported at the end of 2006 and made the company liable for substantial legal claims. Overall, Bear Stearns had significantly higher exposure to derivatives than Lehman and this off-balance sheet risk was a major weight on the firm's financial strength.



Figure 4. Level Assets as a % of Total Assets

Lehman Brothers	3Q '07	4Q '07	1Q '08	2Q '08
Level 3 Assets	5.3%	6.1%	5.4%	6.5%
Level 2 Assets	25.5%	25.6%	25.4%	25.3%
Level 1 Assets	12.0%	10.5%	7.9%	7.1%
<b>Bear Stearns</b>				
Level 3 Assets	5.1%	9.9%	9.4%	N/A
Level 2 Assets	47.3%	79.8%	83.5%	N/A
Level 1 Assets	7.5%	7.5%	6.6%	N/A
<b>Goldman Sachs</b>				
Level 3 Assets	6.9%	6.2%	8.1%	7.2%
Level 2 Assets	47.3%	51.2%	52.2%	51.7%
Level 1 Assets	13.9%	12.3%	11.4%	11.4%
<b>J.P Morgan</b>				
Level 3 Assets	3.6%	4.6%	5.4%	7.7%
Level 2 Assets	62.6%	70.0%	95.6%	88.1%
Level 1 Assets	20.7%	19.5%	15.9%	15.8%
<b>Merrill Lynch</b>				
Level 3 Assets	3.1%	4.8%	7.9%	6.6%
Level 2 Assets	51.8%	78.6%	98.1%	96.9%
Level 1 Assets	9.1%	12.0%	10.7%	10.3%
<b>Morgan Stanley</b>				
Level 3 Assets	7.6%	7.0%	7.2%	6.7%
Level 2 Assets	50.3%	21.6%	27.2%	25.9%
Level 1 Assets	13.8%	11.0%	11.7%	11.6%
<b>Peer Group Level 3 Assets Average</b>	<b>5.3%</b>	<b>6.4%</b>	<b>7.2%</b>	<b>6.9%</b>

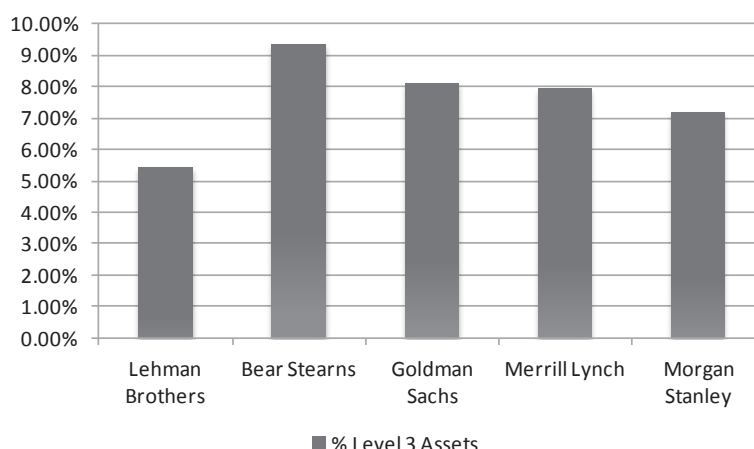
## E. Quality of Assets

The rapid expansion in leverage in the years preceding the financial crisis allowed investment banks to amass huge amounts of risky, but profitable, investments on their balance sheets. One important measure of the quality of a firm's assets is looking at the breakdown of Level 1, 2, and 3 assets on their balance sheet. The concept of Level 1, 2, and 3 assets was introduced due to FASB Statement 157 (2006), which required firms to increase disclosures about how they determine the fair value of their assets. Level 1 assets have readily observable market prices such as stocks or bonds. Level 2 assets, such as interest rate swaps or currency swaps, do not have a standard market price, but their fair value can be determined from other market inputs and are generally determined from proprietary models. A Level 3 asset's fair value cannot be determined from market prices or observable inputs, and some commentators call them "mark to make-believe" because of the inherent subjectivity. They are illiquid and difficult to value, and are generally priced using estimates or risk adjusted value ranges. Examples are mortgage-backed securities and other types of financial instruments.

The amount of Level 3, and to a certain extent Level 2, assets on investment banks' balance sheets was a major

market concern, as firms with high amounts of Level 3 assets had very subjective asset valuations, which had significant implications on a firm's capitalization. Lehman Brothers and Bear Stearns both had a high amount of Level 3 assets relative to shareholder's equity as seen in Figure 4. As a whole, the investment banking industry had too many Level 3 assets on collective balance sheets averaging 7.2% of assets and 200.7% of total equity in the first quarter of 2008 (Appendix 1). Relative to the industry, Bear Stearns had the most Level 3 assets as a percent of total assets on its balance sheet. Despite being a market scapegoat for industry troubles, Lehman's assets in terms of fair value risk were actually better than its competitors.

For the 1<sup>st</sup> quarter of 2008, Bear Stearns had the highest percentage of Level 3 assets out of the five major standalone investment banks at 9.36%. Lehman, however, had the lowest percentage of Level 3 assets out of the five at 5.41% as seen in Figure 5. Despite Lehman having the lowest percentage of Level 3 assets, both the Fed and markets pointed to the quality of Lehman's assets as the prime cause of its failure and the refusal of government assistance. This shows that Lehman's balance sheet was not an anomaly and that other investment banks were in similar, if not worse, condition. Goldman Sachs, the firm the market believed to be in the best shape based on credit default swap (CDS)

**Figure 5. Level 3 Assets 1st Quarter 2008**

prices, maintained some of the highest amounts of Level 3 assets on its balance sheet at 8.11% and 7.18% for the 1<sup>st</sup> and 2<sup>nd</sup> quarters 2008 respectively as can be seen in Figure 4. However, Goldman Sachs was also the best capitalized of the major firms. Thus, Lehman's amount of Level 3 assets relative to the industry demonstrates that it was not in a substantially worse financial position than the rest of the industry and that its firm specific balance sheet was not the sole cause of the government's refusal of aid. Despite Bear having a much higher quantity of Level 3 assets than Lehman, Bear was granted government assistance while Lehman was not, suggesting that other factors outside of the balance sheet such as politics and timing outweighed financial health.

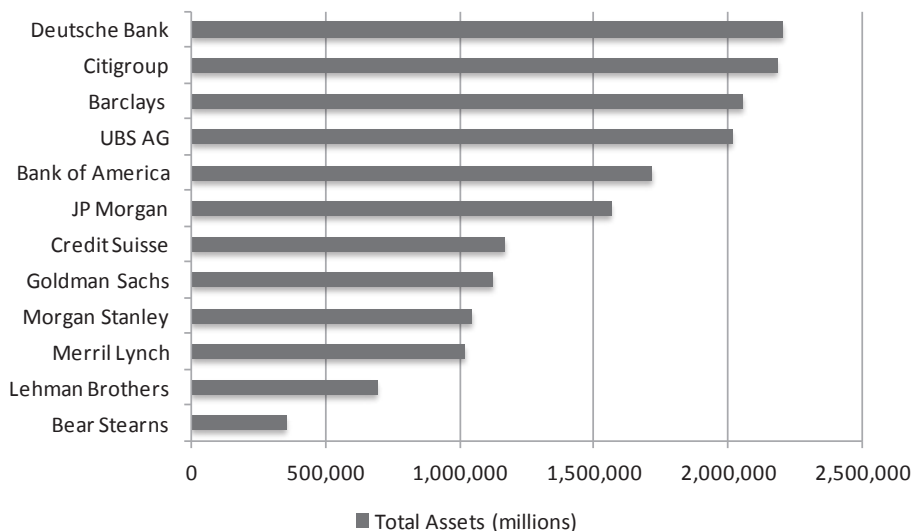
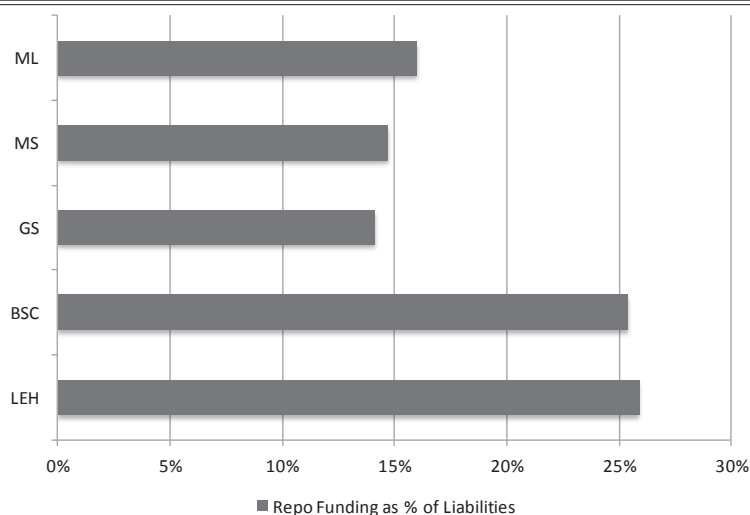
## F. Short-Term Funding

The rapid expansion in leverage forced banks to turn to short term financing to service their massive amount of debt. As panic spread through the market, this need for short-term funding crippled banks' efforts to stabilize their balance sheets and stock prices, as they were dependent on increasingly demanding creditors for survival. Bear borrowed approximately \$50-\$70 billion each night to fund operations through repurchase agreements, which were increasingly popular loans to investment banks that needed to be renewed daily. While unsecured commercial paper was traditionally seen as a riskier lifeline than repo, both short-term funding methods were major issues for Bear. On October 1, 2007, Federated Investors, a major money market fund manager, dropped Bear from its list of approved counterparties for unsecured commercial paper. Bear made an obvious effort to transition its short term funding from commercial paper to repo lending because repo was viewed as more secure. In 2007, they reduced their unsecured commercial paper holdings from \$20.7 billion to \$3.9 billion

while increasing secured repo borrowing from \$69 to \$102 billion. Bear's growing dependency on overnight repos created a big problem because often backing these repo loans were mortgage related assets, of which \$17.2 billion were Level 3 assets (The Financial Crisis Inquiry Report, 2010). When rolling over their repo loans became a problem, this exacerbated Bear's biggest weakness relative to many of its competitors: As the smallest of the investment banks, as seen in Figure 6, it did not have a consumer banking or retail division as a source of additional capital.

Similarly to Bear, heavy reliance on short-term funding caused serious problems for Lehman. At the end of the 1<sup>st</sup> quarter of 2008, Lehman had \$197 billion worth of repos and \$7.8 billion in commercial paper outstanding. Its borrowings in overnight commercial paper had increased 160% from \$3 billion in November 2007 illustrating the bank's increasing need for this type of support. Lehman was often collateralized with very illiquid assets, a risky approach as firms rejected illiquid securities as the markets deteriorated, leaving Lehman vulnerable to insolvency. Striking similarities can be seen in the increase in the reliance of both firms on the short-term funding markets. Additionally, both firms were collateralizing these short-term loans with illiquid, often mortgage related assets, which were rejected as collateral as market concerns increased.

Not only was Bear and Lehman's high reliance on short-term funding problematic, but it was also significantly higher than its competitors in the industry. For the 1<sup>st</sup> quarter of 2008, Lehman financed 25.9% of its liabilities with repo borrowing (Figure 7). Similarly, Bear financed 25.4% of its liabilities with repo borrowing. Conversely, Merrill Lynch's use of repo markets represented 15.8% of its liabilities, while Goldman Sachs and Morgan Stanley both had slightly less than 15% of their liabilities in repos. Their high reliance on repo borrowing relative to its competitors demonstrates the perils of overleverage, as these firms were the two that

**Figure 6. Investment Bank Size by Total Assets FY 2007****Figure 7. Reliance on Repo Funding 1st Quarter 2008**

ultimately failed. Furthermore, both firms used risky and illiquid collateral to back up a significant portion of their repo borrowing. For example, Lehman collateralized 62% of its repo agreements with illiquid assets such as mortgage-backed securities that would not be accepted by the Primary Dealer Credit Facility (PDCF).

### III. Financial Markets

During the financial crisis, market uncertainty and paranoia drastically accelerated and exacerbated the conditions at Bear and Lehman as they sped toward failure. As market paranoia was clearly a significant factor behind the lack of liquidity for both of these firms, regression analysis was used to quantify the effect of both the volatile

equity and debt markets on the stock prices of these firms. A definition of the variables used in the regression analysis can be seen in Appendix 2. The Dow Jones Industrial Average was employed as a proxy for the performance of equity markets, while US Treasury credit default swap prices and the Federal Funds rate were proxies for the debt markets. We accounted for autocorrelation among the error terms by including an AR(1) term. Additionally, intercept and slope failure dummies (BSCFAIL, LEHFAIL) were utilized to test for changes in the intercept and slope on the DJIA and Fed Funds rate. The dummy variables were also employed to test the statistical significance of the failures of both of these institutions. The regression models show the stock market effects on Bear and Lehman, analyze the effect of timing on the scenarios, and examine the effects that these failures had



Figure 8. Regression Summary Table

Model	Dependent Variable	Intercept	X1	X2	X3	AR(1)	R <sup>2</sup> /F
8.1a	LEHSP	-828.0 (-0.04)	0.0093 DJIA (11.51)***	-2.2047 FF (-2.88)**		0.9997 (111.0)***	0.99 6170.0
8.1b	LEHSP	-53.7 (-2.32)*	0.0075 DJIA (9.05)***	-7.8119 BSCFAIL (-4.93)***	-0.0246 LEHCDS (-5.12)***	0.9904 (74.52)***	0.99 5584.2
8.1c	BSCSP	-57.5 (-1.94)	0.0123 DJIA (5.33)***	-3.0392 FF (-1.78)+		1.2025 (16.64)***	0.89 164.5
8.1d	BSCSP	46.6 (1.44)	-0.0028 DJIA (-0.92)	-0.0499 BSCCDS (-3.95)***	1.4420 LEHSP (5.85)***	0.9077 (15.89)***	0.94 257.7
8.2a	DJIA	7973.4 (2.03)*	-120.9005 FF (-1.96)*	8.7025 BSCFAIL (0.04)	-433.9699 LEHFAIL (-1.96)*	0.9942 (160.04)***	0.99 6806.1
8.2b	DJIA	6707.3 (1.17)	-139.7593 FF (-2.28)*	4.4401 BSCFAIL (0.02)		.9953 (176.99)***	0.99 8995.3
8.2c	DJIA	7983.3 (2.04)*	-121.0932 FF (-1.97)*	-433.8833 LEHFAIL (-1.96)*		0.9942 (160.19)***	0.99 9103.1
8.2d	Fed Funds	1.3 (0.86)	-0.4000 DJIA (-1.88)+	-0.2775 BSCFAIL (-1.40)	0.4826 LEHFAIL (2.42)**	0.9896 (139.50)***	0.97 3136.7
8.3a	USTCDS	59.6356 (1.20)	-0.1778 BSCFAIL (-0.06)	4.5625 LEHFAIL (1.67)+		0.9952 (169.37)***	0.99 10989.8
8.3b	BSCCDS	848.3 (3.97)***	-0.0551 DJIA (-3.42)***	7.5095 FF (0.62)	3.6359 USTCDS (0.79)	1.1584 (32.28)***	0.96 429.15
8.3c	LEHCDS	1095.3 (6.79)***	-0.0798 DJIA (-7.29)***	15.3912 FF (1.52)	2.4210 USTCDS (1.83)+	1.0409 (32.87)***	.94 720.6

\*\*\*Significant at the 0.01 level.

\*\*Significant at the 0.05 level.

\*Significant at the 0.10 level.

on both equity and credit markets. The descriptive statistics in Appendix 2 also show there is wide variation among the observations for all variables.

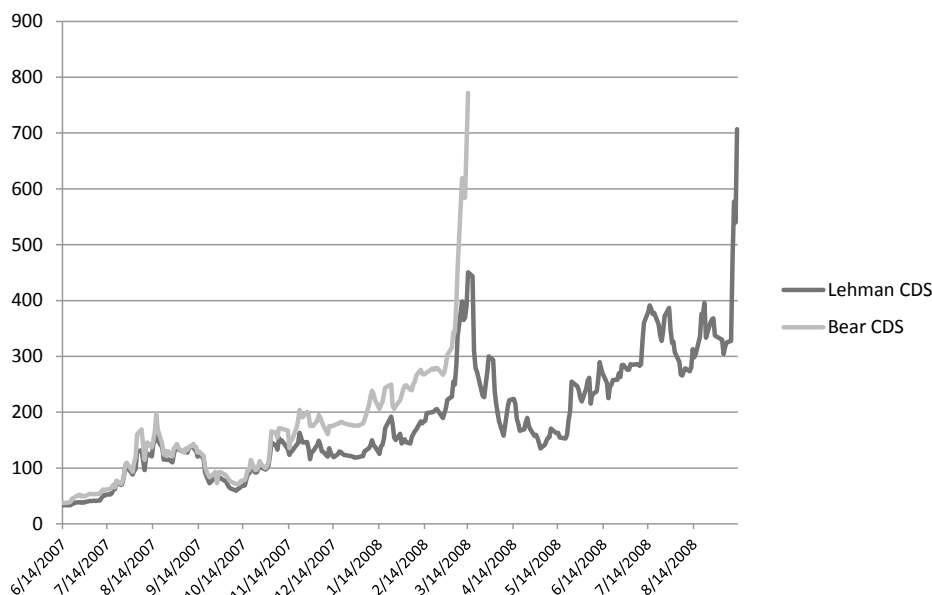
## A. Stock Price Movements

External credit and equity markets affected Lehman Brothers' stock price more than Bear Stearns' (Figure 8). The coefficients of the Fed Funds Rate and the Dow Jones Industrial Average on Lehman's stock price are significant at the 5% level (8.1a). When regressing Bear Stearns' stock price on the DJIA and Fed Funds rate, only the Fed Funds rate had a statistically significant effect on Bears' stock price (8.1c). Additionally, Lehman's credit default swaps and Bear's failure (dummy variable) had a significant effect on Lehman's stock price (8.1b). Lehman's stock price and Bear's credit default swap prices did have a significant effect on Bear's stock price, however (8.1d). This analysis suggests that Lehman's stock price was more broadly affected by general market turbulence than the stock price of Bear Stearns, whose volatility can be more attributed to company specific developments. Additionally, because Lehman's failure came after the failure of Bear Stearns, Bear's failure heavily influenced volatility in the market,

which significantly influenced Lehman.

## B. Equity Markets

The dummy variables representing Bear's failure and Lehman's bankruptcy quantify the effect of these failures on the equity markets. Regressing the DJIA on the Fed Funds rate, and both the Bear Stearns failure and Lehman failure, shows that the Lehman bankruptcy, but not the Bear Stearns bailout, had a statistically significant effect on the equity markets (8.2a). When regressing the DJIA on the Fed funds rate and only the Lehman failure, the Lehman failure had a significant effect on the DJIA at a 5% level. When regressing the DJIA on Fed Funds rate and only the Bear Stearns failure, the Bear Stearns failure again did not have a statistically significant effect on the DJIA (8.2b). These same results can be seen when looking at the equity markets after the failures of each of these institutions. Bear's failure, on March 14, 2008, resulted in a 1.6% (or 194 points) drop in the DJIA in one day. Although the effect of Bear's failure was noteworthy and felt in the markets, Lehman's bankruptcy proved to be much more debilitating to the financial markets. On September 15, 2008, Lehman's bankruptcy had a paralyzing effect on global markets as the

**Figure 9. Bear Stearns and Lehman Brothers 5-Year Credit Default Swap Prices**

DJIA dropped 4.4% (or 504 points) in a single day.

### C. Credit Markets

A similar pattern can be seen through the effect of the Lehman and Bear failures on the credit markets, represented by US treasury credit default swaps (CDS) and the Federal Funds rate. When regressing the Federal Funds rate on the DJIA, Bear failure, and Lehman failure, the Lehman failure, but not the Bear failure, had a statistically significant effect on the Federal Funds rate (8.2d). Employing the US Treasury credit default swaps as the dependent variable to test the effects of the Bear failure and Lehman failure, again, the Lehman failure had a statistically significant effect at the 10% level, while Bear Stearns did not have a statistically significant effect (8.3a). When analyzing the prices of Bear and Lehman credit default swap prices, the DJIA had a statistically significant effect on both CDS prices at a 5% confidence level (8.3b, 8.3c). In addition, Lehman's CDS price was affected by US Treasury credit default swap prices at a 10% significance level (8.3c), while US Treasury credit default swap prices did not have a significant effect on Bear's CDS price (8.3b), further suggesting Lehman's position in the market was more volatile due to general market conditions rather than firm specific issues.

Credit default swaps are a good way to quantify market paranoia, as it represents insurance on the potential default of the underlying security. As worries about these firms escalated, the prices of their respective credit default swaps skyrocketed. As Bear Stearns spiraled toward failure, the cost of protecting its debt through credit default swaps began to rise rapidly. Figure 9 shows the cost of a five-year Bear

Stearns Credit Default Swap contract for \$10 million. On February 14, 2008, just one month prior to Bear's collapse, the cost of the premium was \$269,000 per \$10 million, which just one month later skyrocketed to \$772,000, representing a 187% increase in the price of the credit default swap. Lehman's credit default swaps showed a familiar spike prior to its failure. Figure 9 highlights the noticeable spikes in both March and September 2008. In response to the panic and uncertainty in the market, Lehman's CDS costs rose 98% in March alone leading up to Bear's collapse. At the time of its failure, the cost of a Lehman credit default swaps behaved exactly like that of Bear's, increasing 115% in September. The rapidly rising costs of credit default swaps for Lehman and Bear prior to their failures are clear indicators of market uncertainty and distrust in the debt of these companies.

### IV. The Effect of Timing

The statistically significant effect of Lehman's failure on both the equity and debt markets can perhaps be explained by the fact that Lehman declared bankruptcy, while Bear Stearns was bailed out via a merger with JP Morgan. One could conclude that *if* Lehman received a bailout, the effect of its failure on the markets might have been dramatically reduced. Additionally, one could also argue the effect of timing in the outcomes of both of these failures. If Lehman had been the first to fail, the impacts of these two banks could have been switched. As JP Morgan, the acquirer of Bear Stearns in their failure, was one of the tri-party repo banks for both Bear Stearns and Lehman Brothers, they may have acquired Lehman Brothers had they been the first bank in trouble. Due to the similarity of the capital positions

and liquidity positions of both of these banks, timing had a greater effect on the bankruptcy of Lehman than the current presiding reason of having inadequate capital. Additionally, the timing of the failures seemed to contribute significantly to the decision of the US government to provide or deny government capital to aid the failing banks. As Bear Stearns was in trouble first, the government was willing to step in to help JP Morgan acquire them. After negative press over the Bear Stearns bailout, the bailouts of Fannie and Freddie, as well as the insistence on preventing moral hazard, the US government was firmly against providing government financial support to prevent the failure of Lehman Brothers. The two potential acquirers of Lehman Brothers, Bank of America and Barclays, both demanded government assistance in order to share the risk in taking on Lehman's liabilities in an acquisition. With the refusal of US government aid, both of these potential acquirers withdrew.

The day after the Bear Stearns failure, the Fed announced a new program called the Primary Dealer Credit Facility, which offered overnight cash loans in exchange for a wide variety of collateral, including some AAA rated asset-backed securities. This was intended to send the message that the government supported these institutions and lenders could be comfortable that their money was safe. The primary dealer credit facility (PDCF) would not accept the most toxic assets such as subprime mortgages, which comprised over three-fifths of collateral used by Lehman in the repo market. Lehman had borrowed substantially from the PDCF in the two weeks following Bear's collapse, but stopped borrowing because of the negative signal to the market. However, JP Morgan began to demand that the PDCF accept these riskier assets as collateral or they would not unwind Lehman's repo contracts with them, which would essentially force Lehman into failure. Before their bankruptcy, Lehman desperately tried to get the Fed to accept a broader range of collateral so that it could borrow cash to keep the bank open. The Federal Reserve and US Treasury rejected Lehman's requests, forcing them into bankruptcy. If JP Morgan had not acquired Bear in March, the conditions raise the question whether they might have acquired Lehman instead. If it were Lehman in March and Bear in September, the outcome of these two banks could have been drastically different, leading to the conclusion of the importance of timing in this situation. Ultimately, the increasing risk of moral hazard and the general deterioration of the economy by the time of Lehman's failure weighed heavily on both the government's decision and potential buyers' decisions not to save Lehman.

The advantage of failing first appears to have been most beneficial to the creditors of Bear Stearns, as the government-assisted bailout enabled them to receive their money back at par value. Lehman's creditors, however, were not so lucky, as the refusal of federal aid and the absence of a potential buyer forced Lehman Brothers into bankruptcy with the creditors'

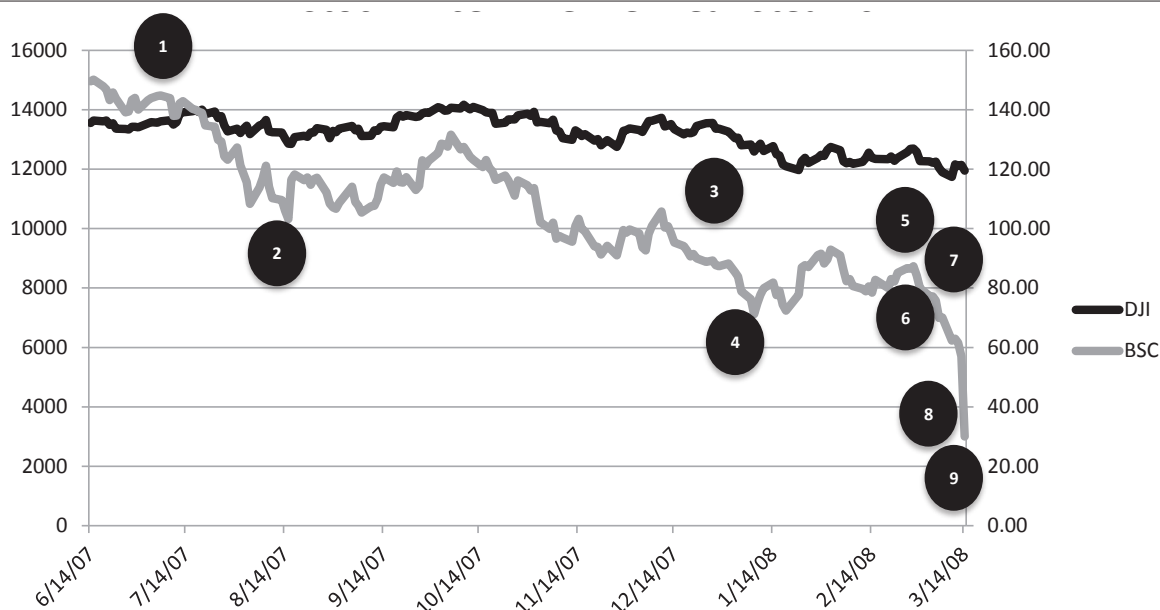
fate left in the hands of bankruptcy court. Because market participants expected government assistance to be provided to Lehman, the ultimate refusal and resulting bankruptcy had a more fatal effect on the global market place. In not being the first to fail, Lehman Brothers became the line that the government drew to end the perpetuation of moral hazard. Because Lehman Brothers was forced into bankruptcy, it not only wiped out shareholders and creditors of Lehman, but also sparked the ultimate crash in the global marketplace.

## A. Bailout: Bear Stearns

Despite their aforementioned similarities, the fate of Bear Stearns and Lehman Brothers was dramatically different. A combination of an aggressive firm culture, risky lending, overdependence on short term funding, and a run by their customers had cash "flying out the door" as Bear spiraled toward failure. Fearing a complete lack of liquidity, on March 14, 2008, Bear was forced to turn to the government for help. A timeline of events can be viewed in Figure 10. After intense discussions with JP Morgan and the Federal Reserve, an agreement was reached to extend a 28-day credit line to Bear Stearns. JP Morgan accessed the Federal Reserve's discount window and offered Bear a \$30 billion credit line to fund its cash needs and to help satiate its dire liquidity problem (Kelly, 2008). Bear executives saw this credit line as a much needed savior, as it would give them a month to seek alternative financing and ease the tightening pressure on liquidity. The market, however, did not interpret the credit line positively. Stowell (2009) recounted that the market saw the credit line as a "last desperate gasp for help" resulting in capital streaming out the door, while Bear's stock plummeted 47%. This credit line, backed by the US government, allowed Bear to open for business Friday, but its clients and trading partners continued to flee the ailing company.

The following day, March 15, 2008, Wall Street investment firms poured over Bear's books in an attempt to value their illiquid assets. The sticking point for firms was Bear's large mortgage holdings to which bankers were having difficulty assigning value. The uncertainty of the large mortgage holdings and the current stigma that Bear held in the market scared the potential acquirers away. JP Morgan, with the support of the Federal Reserve, would ultimately rescue Bear Stearns. As Bear's clearing bank in the tri-party repo market, JP Morgan had been constantly looking at Bear's assets for six months and had a much better idea of their positioning than the other banks. This knowledge of Bear's assets allowed them to move quickly in making a decision about acquiring Bear, and their size and stature made JP Morgan a solid fit to make the offer. JP Morgan originally made an offer of \$8 per share but quickly retracted it, as

Figure 10. Stock Price Timeline of Bear Stearns



- 1 **August 1, 2007** Two Bear Stearns hedge funds file for bankruptcy following mortgage-related losses.
- 2 **December 20, 2007** Bear Stearns posts 4th quarter loss of \$854 million. First quarterly loss in its history.
- 3 **December 28, 2007** CEO Cayne sells \$15.4 million of the Bear Stearns stock over the month.
- 4 **January 9, 2008** Cayne resigns as chief executive of the company, but stays as chairman, and Alan Schwartz takes over.
- 5 **March 10, 2008** Moody's downgraded 163 tranches of Bear issued mortgage-backed bonds; Schwartz denies rumors of liquidity problems; stock falls 11%.

- 6 **March 11, 2008** Fed announced a \$200 billion lending program to help financial firms in the credit crisis; Markets interpreted as directed toward Bear.
- 7 **March 13, 2008** Goldman refuses trade with Bear; so many clients pulled their money from Bear Stearns that the firm had run through \$15 billion in cash reserves.
- 8 **March 14th, 2008** JP Morgan offers Bear a \$30 billion credit line; stock price plummets 47%.
- 9 **March 16th, 2008** Bear Stearns is bought by J.P. Morgan with support from US Government.

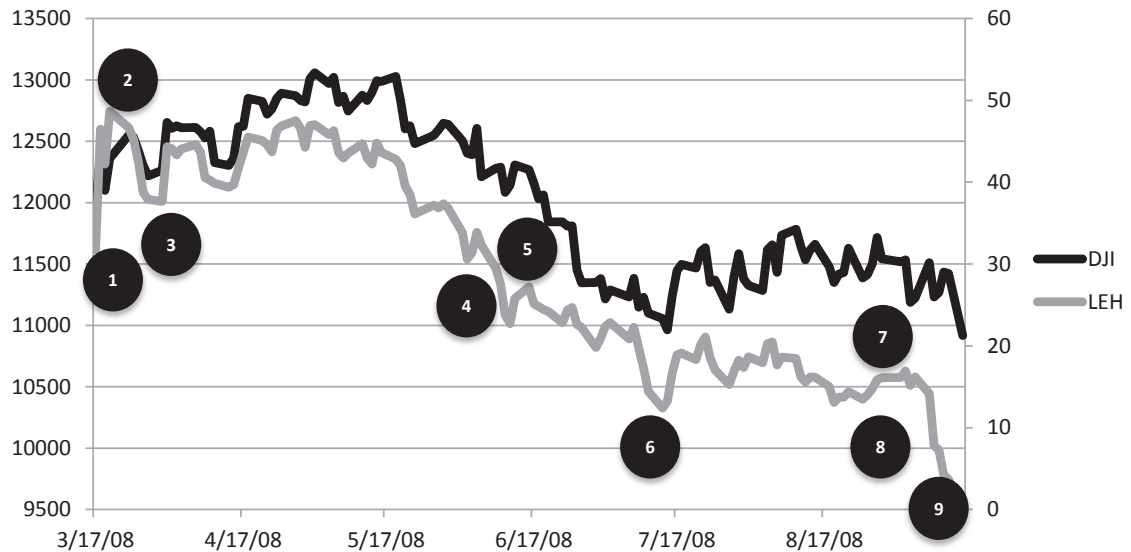
they were nervous that the deal was too risky and would put them on the hook for too many potential losses (Kelly, 2008). JP Morgan reconsidered taking over Bear when the government stepped in and assisted them in taking potential losses. The government's role here is pivotal and a stark contrast to Lehman's failure when the government would not provide the monetary assistance that potential buyers were demanding. JP Morgan assumed responsibility for the first \$1 billion in losses, while the government would be exposed to the next \$29 billion. A big fear that the government faced in helping with the bailout of Bear Stearns was the power of moral hazard. Kelly (2008) argued that the government did not want firms to think that they would be able to rely on a bailout by the government: "The Fed got stability in the markets, but at a risk of tens of billions of dollars and by setting an uncomfortable precedent." Bear was forced

to accept the low offer of \$2 per share, raised to \$10 when shareholders revolted, which was a 97% discount from its \$32 close on Friday.

## B. Bankruptcy: Lehman Brothers

Six months later, Lehman found themselves in a similar crisis of liquidity and investor confidence. Despite having similar financial conditions to Bear, due to politics and the effect of timing, the government refused aid to Lehman in favor of an orderly bankruptcy. Fuld had put off taking any serious action to find a potential buyer for the firm until the situation became perilous. As Lehman's market capitalization declined steadily throughout the year, any further loss in market value would threaten the firm's solvency. In late August, upper management finally began to take seriously the need to find a buyer. A timeline of events

Figure 11. Stock Price Timeline of Lehman Brothers



- 1 **March 16th, 2008-** Bear Stearns is bought by J.P. Morgan with support from US Government.
- 2 **March 18th, 2008-** Lehman Brothers announces 1<sup>st</sup> quarter earnings and a strong profit, which reassures jittered markets.
- 3 **April 1st, 2008-** Lehman raises \$4 billion worth of capital through issuance of preferred stock.
- 4 **June 9th, 2008-** Lehman announces major 2<sup>nd</sup> quarter loss, but also raises significant capital.
- 5 **June 12th, 2008-** Erin Callan and Joe Gregory resign in management shakeup.

- 6 **July 15th, 2008-** Report that Lehman was considering going private or finding a buyer.
- 7 **September 6th, 2008-** US Government puts Fannie and Freddie in conservatorship.
- 8 **September 9th, 2008-** Report that KDB pulls out of acquisition talks. Stock plummets 55%.
- 9 **September 15th, 2008-** Lehman brothers files for Chapter 11 bankruptcy

leading up to Lehman's bankruptcy can be seen in Figure 11.

Lehman vigorously pursued several opportunities to save itself in the two weeks prior its failure including a potential investment from the Korean Development Bank or selling its investment management division, Neuberger Bergman. The most viable option for Lehman's survival, however, was to be acquired by either Barclays or Bank of America. Despite refusing financial support to Lehman Brothers, the government did make an effort to save Lehman through other means in the financial markets. Paulson encouraged both Bank of America and Barclays to pursue deals with Lehman. Both banks were pushed by the Federal Reserve to make a deal for the broader safety of the financial system. However, the Federal Reserve and US Treasury had made it clear in light of its controversial support for Bear Stearns and backlash in the previous week over the government

takeover of Fannie Mae and Freddie Mac that there would be no government support for Lehman. The need to balance political risks and prevent a moral hazard problem made government support for Lehman unfeasible, at least initially.

Sorking (2009) explained that the political liability of providing government assistance to Lehman Brothers ultimately led to the refusal of government aid, as Paulson insisted, "I can't be Mr. Bailout." Nonetheless, the Federal Reserve and US Treasury analyzed the possibility of government support for an acquisition and actively pushed all parties to quickly close a deal (The Financial Crisis Inquiry Report, 2010). Bank of America was originally seen as a strong suitor for Lehman as one of the largest banks in the country with a strong base of commercial deposits, yet lacking a renowned investment banking practice. However, the Fed had pushed the two into talks before and Bank of



America had said that Lehman's assets were too overvalued to be acquired without any government support. Barclays, however, was much more eager to acquire Lehman in order to obtain a well-known investment banking franchise in the US to aid its international expansion. The urgency of the situation provided little room for Lehman to save itself and by September 2008 there was not adequate time to secure a deal with Barclays. Despite the government's insistence of no bailouts, they had been willing to provide a guarantee for the acquisition of Lehman by Barclays, which was the same guarantee given in the acquisition of Bear Stearns by JP Morgan. However, due to British law, Barclays would require the government to guarantee Lehman's obligations until a shareholder vote occurred, which could take 30 to 60 days.

This approval period was time that Lehman Brothers simply did not have. The US government was unwilling to secure the deal until it was approved because if the acquisition fell through they would be responsible for all of Lehman's toxic assets. It was not Lehman's asset position that sent the firm into bankruptcy, but rather the time that it did not have left to survive in an uncertain market place that increasingly distrusted the firm's assets. Without US government support, the transaction with Barclays also fell through.

With the pressure of moral hazard weighing heavily on government action, Secretary Paulson and Timothy Geithner, President of the New York Fed, called together the heads of the major US investment banks. One option being considered for Lehman's future was called "Spinco," which would have split Lehman into two companies: one with Lehman's good assets and one with Lehman's bad assets. This plan would shift roughly \$32 billion worth of Lehman's most toxic real estate assets into a new company that would hold all of these bad assets. Insiders indicated this plan would have allowed Lehman to rid its balance sheet of 80% of its commercial mortgages. More importantly, it would have sent a signal to the markets that it was taking serious steps to stabilize the company. Lehman would inject a significant amount of equity into the new company, but talks were also underway to get a large portion of equity from a consortium of other investments banks in order to provide stability for the industry.

Paulson was convinced that they would need to prepare a "LTCM-like solution" in which the government would encourage other major investment banks to collaborate and put their own capital together to save Lehman Brothers (Sorkin, 2009). In 1998, the Federal Reserve organized a private sector \$3.6 billion bailout of Long-Term Capital Management (LTCM) funded by the major financial

institutions on Wall Street. This private sector bailout used no government money and led to the gradual unwinding of LTCM, which mitigated the potential catastrophic effects of failure on the markets. Paulson was hoping to replicate this same type of collaborative private sector deal for Lehman Brothers, as it would not put taxpayer money at risk and would protect the government from further political criticism about bailing out financial firms. Unfortunately, the amount needed to save Lehman was deemed too large with all the banks facing mounting pressure on their own capital bases (Onaran, 2008). Moreover, the government's previous rescue of Bear Stearns led many to believe that similar government action would be taken to save Lehman Brothers.

There is strong reason to believe political pressure was a stronger motivating factor than analysis of the firm's capital or assets. After the bailout of Bear Stearns, the government feared the effect of moral hazard influencing the markets. If large and important institutions believed that the federal government would save them regardless of how reckless their actions were, there could be serious disincentives for market discipline and tough management. Furthermore, there was intense political pressure at the time as neither political party wanted to appear as blindly supporting Wall Street with pivotal national elections occurring in November of 2008. One government official privately confided that they "would have been impeached if [they] bailed out Lehman" (Sorkin, 2009).

Ultimately, the Fed's decision not to lend to Lehman or provide financial support to a potential buyer like it did for Bear hinged on Section 13(3) of the Federal Reserve Act of 1913. This act requires that any direct lending by the Fed be for the purpose of providing liquidity and support to the financial system, but not to support a failing institution. The Federal Reserve Act (1913) stipulates that the firms the Fed would lend to must have adequate collateral for the loans and "[prohibits] borrowing from programs and facilities by borrowers that are insolvent." Thus, the Fed deemed that Lehman did not have adequate collateral for the Fed to lend against. Phillip Swagel, Assistant Secretary for Economic Policy at the Treasury Department from 2006 to 2009, detailed the government perspective on the issue:

"The key difference between the two was in their financial situation—by the end, Lehman was deeply insolvent while Bear was on the border at the time of its distress. Bear was certainly illiquid but it's not clear it was insolvent (and the NY Fed now books a profit on the assets they took on from Bear, suggesting that the firm was solvent but illiquid)."

**Ultimately, Lehman Brothers was forced into bankruptcy due to poor timing and the fear of moral hazard that made brokering a deal to save Lehman unfeasible for both the private sector and the government.**

In direct contrast to this statement by the government, David Einhorn, head of Greenlight Capital, asserted, “from a balance sheet and business mix perspective, Lehman is not that materially different from Bear Stearns” (Sorkin, 2009). The government insisted that providing aid was not only putting taxpayers at risk for billions of dollars in losses, but it was also illegal. Ultimately, the government’s decision was based upon a determination that Lehman’s collateral was not sufficient, whereas six months earlier Bear’s was deemed “adequate.” Aforementioned analysis suggests that this assertion may not entirely explain the government’s decision to withhold support for Lehman, and that the conditions of Bear and Lehman were in fact very similar. As previously discussed, Bear had a higher percentage of Level 3 assets, higher leverage, and more derivatives contracts than Lehman at the time it was bailed out. Despite these similarities, Lehman was forced into bankruptcy due to the refusal of government aid.

Swagel (2011) also mentions the element of the size of government aid demanded by potential Lehman buyers, “[They] wanted enormous participation from the government or other firms—perhaps as much as \$100 billion. In contrast, JPMC needed only \$29 billion of assistance to buy Bear.” Thus, with the Fed having already expanded its balance sheet and lacking a large US buyer, timing and firm size may have played more of a role than asset quality and collateral. Ultimately, Lehman Brothers was forced into bankruptcy due to poor timing and the fear of moral hazard that made brokering a deal to save Lehman unfeasible for both the private sector and the government.

### C. Moral Hazard

Despite the similar circumstances that these two firms faced, the government decision to prevent moral hazard led to their decision to refuse aid to Lehman Brothers, which was inconsistent with their previous decision to bail out Bear Stearns. Reinhart (2011) argues that the inconsistent policy responses spurred instability in the markets and amplified the negative effect of Lehman’s failure, which particularly blindsided stakeholders who expected government action to save Lehman who was larger and arguably more systematically important than Bear Stearns. Although Bear Stearns shareholders suffered, the Fed structured the JP Morgan acquisition so that all of Bear Stearns’ creditors were protected. This action signaled to the markets and financial institutions that there was significant likelihood of future intervention and created a moral hazard issue in which upper management at firms sought to plan for the possibility of federal assistance instead of focusing on improving the

asset mix on their balance sheets (Reinhart 2011). Had the Federal Reserve not lent to Bear Stearns, it can be argued that the moral hazard issue would not have arisen and banks would have focused on improving their capital position, while creditors and investors would take a harder look at the quality of their investments. Thus, the government’s initial bailout of Bear Stearns created an expectation of a future bailout for strategically important firms. This expectation was further substantiated when Fannie Mae and Freddie Mac were placed into government conservatorship. As previously analyzed, both Lehman and Bear were in similar financial shape, yet Lehman was denied any government assistance despite the expectation of government intervention.

## V. Conclusions

Timing and politics seemed to play a greater role than firm finances in the determination of who received federal support in the failures of Bear Stearns and Lehman Brothers. Bear Stearns and Lehman Brothers were very similar in terms of Level 3 assets and reliance on short term funding, and Bear Stearns was arguably in a more dire condition. Despite the similar circumstances that these two firms faced, the government decision to prevent moral hazard led to their decision to refuse aid to Lehman Brothers, which was inconsistent with their previous decision to bail out Bear Stearns. Moreover, the entire industry was drastically overleveraged and too reliant on short term funding. Lehman, however, was more poorly capitalized than the other firms and the broader financial markets had deteriorated considerably by the time it failed. Lehman’s poor risk management and arrogant leadership also prevented the firm from taking sufficient action to save itself. Furthermore, there was no major American buyer like JP Morgan to save Lehman. Desiring to prevent moral hazard, the Fed was gravely conscious of the negative publicity they were receiving from previous government bailouts and were insistent on making an example of an institution. Combined with the effect of market paranoia, the impending runs on these banks gravely affected their liquidity and stability, which can be seen in the regression on CDS prices. Due to the apparent market effects, one can question whether the outcome would have been reversed had the timing of these two failures been switched. Ultimately, it seems Lehman’s failure cannot be entirely explained by the firm’s own assets or poor decisions, but rather industry wide leverage and funding problems compounded with the government’s unwillingness to provide support to another institution, the timing of other institutions’ failures, and the effect of broader market turmoil. ■

### Appendix 1. Level Assets as a % of Shareholder's Equity

Lehman Brothers	3Q '07	4Q '07	1Q '08	2Q '08
Level 3 Assets	159.58%	186.66%	171.18%	157.35%
Level 2 Assets	774.94%	785.50%	804.73%	615.91%
Level 1 Assets	364.21%	322.69%	248.70%	173.41%
Bear Stearns				
Level 3 Assets	155.79%	238.86%	313.97%	N/A
Level 2 Assets	1446.18%	1926.11%	2799.08%	N/A
Level 1 Assets	229.19%	249.87%	220.76%	N/A
Goldman Sachs				
Level 3 Assets	184.18%	161.57%	226.10%	174.23%
Level 2 Assets	1264.47%	1340.27%	1456.72%	1254.38%
Level 1 Assets	371.12%	322.92%	317.69%	277.81%
J.P Morgan				
Level 3 Assets	44.90%	57.86%	71.08%	102.99%
Level 2 Assets	772.35%	887.07%	1249.63%	1175.16%
Level 1 Assets	255.85%	246.59%	207.86%	210.52%
Merrill Lynch				
Level 3 Assets	87.46%	152.22%	225.40%	184.59%
Level 2 Assets	1472.47%	2509.50%	2798.00%	2693.38%
Level 1 Assets	258.10%	382.47%	304.56%	286.12%
Morgan Stanley				
Level 3 Assets	254.89%	229.63%	196.17%	168.48%
Level 2 Assets	1690.22%	704.38%	743.44%	650.84%
Level 1 Assets	464.34%	359.06%	321.69%	291.12%
<b>Level 3 Peer Group Average</b>	<b>147.80%</b>	<b>171.13%</b>	<b>200.65%</b>	<b>157.53%</b>

### Appendix 2. Regression Variables Definitions

Regression Variables Definitions		Mean	Std. Dev.	Max	Min
<b>LEHSP</b>	Lehman Brothers stock price data from 6/14/2007 to 9/12/2008	38.57	17.21	66.00	3.65
<b>BSCSP</b>	Bear Stearns stock price data from 6/14/2007 to 3/14/2008	81.90	11.06	100.84	30.00
<b>LEHCDS</b>	Lehman Brothers 5-year credit default swap prices from 6/14/2007 to 9/12/2008	241.11	96.16	706.70	118.80
<b>BSCCDS</b>	Bear Stearns 5-year credit default swap prices from 6/14/2007 to 3/14/2008	270.09	124.15	772.10	174.30
<b>LEHFAIL</b>	Dummy variable for Lehman failure; LEHFAIL = 0 until September 15, 2008, and 1.0 afterwards	0.41	0.49	1.00	0.00
<b>BSCFAIL</b>	Dummy variable for Bear Stearns failure; BSCFAIL = 0 until March 14, 2008, and 1.0 afterwards	0.80	0.40	1.00	0.00
<b>DJIA</b>	Dow Jones Industrial Average data from 6/14/2007 to 3/31/2009	10,696.46	2,016.95	13,551.69	6,547.05
<b>Fed Funds</b>	Federal Funds rate data from 6/14/2007 to 3/31/2009	1.70	1.25	4.37	0.08
<b>USTCDS</b>	US Treasury 5-year credit default swap prices from 6/14/2007 to 3/31/2009	30.10	27.54	100.00	5.80

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