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From Hubris to Nemesis: January to September 2008

January 2008: outlook rosy

In its financial report for the fiscal year ending 30 November 2007, published on 29 January 2008, Lehman Brothers reported record revenues of nearly $60bn, and record earnings in excess of $4bn. The highlights of the report included net revenues of $19.3bn (a 10 per cent increase over the previous year and the fifth consecutive record) and a net income of $4.2bn (a 5 per cent increase over the previous year and the fourth consecutive record). Earnings per share came in at $7.26, a 7 per cent increase over the previous year and a record for the fourth consecutive year, and a return on equity of 20.8 per cent.[1] These achievements were somewhat marred by the fact that Lehman's share price had declined for the first time in five years, perhaps due to the much more difficult economic environment in the second half of the year. Fixed income had been hit by tough credit markets and the housing downturn had affected their mortgage origination and securitization business to such an extent that they had closed BNC Mortgage, a subprime lending unit, with the loss of 1,200 jobs, as well as the Korea Central Mortgage business. None of these were mentioned in the introduction to the company's report. Instead, Dick Fuld referred to the disruption in the mortgage market, the sharp decline in liquidity and the slowing of corporate and institutional activity. He added, 'We have successfully navigated difficult markets before. We have benefited from our senior level focus on risk management and, more importantly, from a culture of risk management at every level of the Firm'.[2]

The annual report made a good start to the year, many observers concluded. It was followed by the first quarter report, published on 17 March 2008. Their press release reported a net income of $489m for the first quarter, ending on 29 February, which was 57 per cent lower than the $1.15bn for first quarter of 2007. The press release also highlighted record client activity in their capital markets businesses, record net revenues in investment management, and that Lehman ranked second in global M&A transactions for the first two months of 2008. The company maintained its strong liquidity position, with the holding company having a liquidity pool of $34bn and unencumbered assets of $464bn, with an additional $99bn at their regulated entities. The liquidity pool was one of the business highlights listed in the press release.

The impact of the fall of Bear Stearns

Lehman's March results were announced shortly after the news that Bear Stearns had had to arrange emergency funding from JP Morgan and the New York Federal Reserve, amid a deepening liquidity crisis. The immediate trigger was its stake in Carlyle Capital Corporation (CCC), a $22bn hedge fund exposed to mortgage-backed securities. The fund was suspended in Amsterdam, after it revealed that it had substantial additional margin calls and default notices from its lenders. As Bear Stearns was the founder of the fund and owned 15 per cent of it, its shares fell by 17 per cent when CCC collapsed on 13 March. Investors had become increasingly anxious about Bear Stearns and its exposure to CCC and other troubled hedge funds. By the end of 2007 Bear Stearns' balance sheet showed $395bn in assets supported by $11.1bn in equity, a leverage ratio of 36:1. Nothing was done to improve the situation and the bank failed to raise additional funding. In March it began to face a run on the bank, as one firm after another sought to withdraw its funds, and hedge funds requested that a Swiss bank take over trades where Bear Stearns was the counterparty. In one week, Bear Stearns had lost $18bn of its reserves. By midday on 13 March, it was clear that the firm might not last until the next business day. A conference call was held the following day with Timothy Geithner, President of the Federal Reserve Bank of New York, and Ben Bernanke, Chairman of the Board of Governors of the Federal Reserve Bank, and JP Morgan agreed to purchase Bear Stearns.

With the support of the Federal Reserve Bank to the tune of $30bn, on 16 March JP Morgan offered to buy Bear Stearns for $2 per share; the price was subsequently raised to $10 per share for the purchase of 95 million shares to ensure the agreement of Bear Stearns' board. The Federal Reserve's $30bn special financing associated with the transaction depended on JP Morgan Chase taking the first $1bn of losses associated with any of Bear Stearns' assets being financed, and the Federal Reserve agreed to fund the remaining $29bn on a non-recourse basis to JP Morgan Chase. The collapse of Bear Stearns and its subsequent rescue had shocked the market.

The Federal Reserve explained its actions in its press release of 16 March 2008. On 13 March, Bear Stearns advised the Federal Reserve that it did not have enough funding or liquid assets to meet its financial obligations the following day, and would be unable to find a private sector source of funding. Given 'its large presence in several important financial markets' such as mortgage-backed securities and the securities clearing services, and the 'potential for contagion', the Federal Reserve took the view that it should provide a bridge loan through JP Morgan Chase Bank to Bear Stearns on 14 March. This was insufficient, and by the weekend it became clear that the bank would be bankrupt by Monday 17 March. JP Morgan Chase emerged as the only viable bidder bank for Bear Stearns. To facilitate the merger, the FRBNY created a limited liability company, Maiden Lane LLC, to acquire Bear Stearns' assets. Maiden Lane LLC then managed the assets, having purchased approximately $30bn from Bear with a loan of $29bn from the FRBNY. The details of the loan and the order in which repayments from the assets were to be made to the Federal Reserve were set out in the press release. Both the bridge loan and the loan to Maiden Lane LLC were made 'under the authority of Section 13(3) of the Federal Loan Act, which permitted the Board, in unusual and exigent circumstances, to authorize Reserve Banks to extend credit to individuals, partnerships and corporations'.[3] That makes it difficult to understand the subsequent claims made by Ben Bernanke, Timothy Geithner and Henry Paulson, that they lacked the legal authority to bail out Lehman Brothers by such means.

Many expected Lehman Brothers to be the next to fall. Its stock declined by 20 per cent the day after the bail-out of Bear Stearns, with more than 40 per cent of its shares changing hands. During that quarter, bond risk spreads had widened considerably and equity values had fallen sharply. However, Richard Fuld was able to announce, 'Our results reflect the value of our continued commitment to building a diversified platform and our focus on managing risk and maintaining a strong capital and liquidity position.' This presentation of their results seemed to allay investors' fears about the company's ability to withstand the turmoil in the financial markets caused by the collapse of Bear Stearns. Lehman's share price shot up by 48 per cent, the biggest surge it had ever experienced.[4] But this was simply a recovery from what had been lost the previous day because of fears that it would be the next investment bank to fail after Bear Stearns.

Lehman saw the price of CDSs (credit default swaps) on its bonds jump from $228,000 to $398,000 between 3 March and 10 March. On 11 March, the Federal Reserve introduced an important measure, the Term Securities Lending Facility, aimed at lending as much as $200bn in Treasury securities to banks and primary securities dealers and the major investment banks, by pledging capital, such as investment grade mortgage-backed securities and all securities eligible for tri-party repurchase agreements for a period of 28 days, instead of overnight. Primary dealers had increased difficulties in obtaining funding and so were less able to support broader markets. This facility was designed to improve conditions in the financial markets more generally.

Doubts emerge about Lehman's March financial statement

Lehman's March financial statements, announcing a profit of $489m., came as a great relief. However, the euphoric market reaction to the first quarter results did not last. Suspicions about the accuracy of Lehman's financial statement emerged, aided and abetted by David Einhorn's critique of the company's 'accounting ingenuity' in his presentation to the Ira W Sohn Investment Research Conference on 21 May. As the founder and President of Greenlight Capital, a very successful long-short value-orientated hedge fund with $6bn in assets, founded in 1996, Einhorn commanded the attention of the markets. He made it clear that Greenlight 'was short on Lehman'. Some three weeks after the press release and the accompanying conference call in which Einhorn had participated, Lehman filed its 10-Q with the SEC for the quarter.

Einhorn presented his analysis of the press release alongside the 10-Q. Both refer to 'other asset-backed securities' with an exposure of $6.5bn. At first, there had been little reference to collateralized debt securities, but in the footnote it was explained that the 'other asset-backed securities' were in fact CDOs, 'primarily structured and underwritten by third parties' and that about 25 per cent of the positions held at 27 February 2008 and 30 November 2007 were 'rated BB+ or lower'. In other words, the whole $6.5bn consisted of CDOs and synthetic CDOs. They were not based on residential mortgages, but on commercial real estate. A write-down of only $200m. was much too small on a $6.5bn pool of CDOs, of which at least $1.6bn were below investment grade. Lehman also had $59bn of exposure to commercial mortgages at the end of the year, in which the Triple-A rated commercial mortgage-backed securities declined by 10 per cent in the first quarter, and lower-rated bonds fell even further, so Lehman's write-down should have been more that 10 per cent, instead of which it was less than 3 points. These and other discrepancies spelt out in Einhorn's presentation meant that Lehman should deleverage and raise capital 'before federal taxpayer assistance is required'. The effects of the presentation and the extensive media coverage began to emerge a few days later.

On 27 May, *Forbes* reported that the 'bears are prowling around Lehman Brothers'. The 'puts' were in $30 contracts expiring in June, which meant that many traders saw Lehman's shares falling by 16 per cent in June, whilst others saw the stock falling to $17.50 by then, and a few contracts were out on $5 January options. The article noted that the 'speculation is also being aided' by David Einhorn as a result of his speech. On 4 June *The New York Times* noted that he had 'pilloried the venerable Lehman Brothers in an effort to drive down the bank's stock price, which he is betting against'. He was succeeding. The stock had already fallen by 59 per cent over the previous twelve months. While he was criticizing Lehman Brothers, he was also working with a financial public relations company to promote his book, *Fooling Some of the People All of the Time: a Long Short Story*. As with many others, Greenlight Capital suffered losses of 22 per cent on longs, but made 17 per cent on shorts in a year in which the firm 'made too many mistakes'.[5] However, in 2009, it recouped all of its losses, which had more to do with macroeconomic and market developments than its investment strategy.

Lehman had sold assets worth $100bn during the previous few months in order to shore up its finances. All this was of no avail when the second quarter results were published on 9 June, which revealed a much greater loss than expected of $2.8bn. This was the first loss Lehman had experienced since becoming a public company in 1994. The bank also announced that it would raise $6bn in common and preferred shares to strengthen its financial position. Erin Callan, Lehman's chief financial officer, stated that the bank did not really require the new capital but it would be used to seize market opportunities in the future. But Lehman Brothers revealed that it had booked $17bn in write-downs since the credit crisis began. These included $11bn in mortgage and asset-backed securities, about $3.5bn in commercial mortgages and $2bn in leveraged loans, but these were offset by hedging benefits of approximately $7.5bn, although some of the hedging had not been as beneficial as expected. Hedging would be continued. Lehman also disclosed that its liquidity pool had increased from $35bn to $54bn, decreasing its gross assets by $130bn by the end of May. As a result, its exposure to mortgages and real estate investments decreased by 15–20 per cent, while its exposure to leveraged business was 35 per cent lower.[6]

The results were released a week early in an effort to reduce investor anxieties, following intense speculation about the state of Lehman's finances. This did little to assuage market fears, and Lehman's shares fell by another 10 per cent. On 13 June, still facing a credibility crisis with investors, Dick Fuld took the classic way out by sacking his lifelong friend Joseph Gregory as his No 2, and demoting

Erin Callan to the investment banking division, replacing them with two other long-standing Lehman staff, Bart McDade and Ian Lowitt as his deputy and chief finance officer respectively. This did not help either. The shares continued to fall. The collapse of Bear Stearns was seen by many as a turning point in the crisis, but the apparent decline of Lehman Brothers continued to worry investors and Wall Street. However, hopes had been raised that the worst was already over.

An internal classification memorandum produced by Citibank gives an interesting and perhaps more considered analysis of Lehman at the time and on the basis of the information provided by the company. S&P and Moody's rated Lehman Brothers as A and AA respectively in 2007. In March 2008, after the collapse of Bear Stearns, S&P revised its outlook from negative to stable and from June, A/negative/A-1. Moody's remained as AA until September 2008. The Q1 results enabled the rating agencies to reaffirm their ratings, based on Lehman's 'abundant liquidity and strong risk management'. But Lehman's credibility suffered when the company raised capital three times following its January statement that it did not require any more. On 2 June the rating agencies downgraded Lehman's unsecured rating, as well as those of Merrill Lynch and Morgan Stanley, as part of a review of the global securities industry. Before the Q2 results were announced, several analysts had revised their estimates on the grounds that the company had used special one-time charges and gains to artificially inflate its first quarter results, and that it had not disclosed its holdings of collateralized debt obligations before the first quarter. Lehman had not valued its commercial mortgage related assets based on current market prices. Lehman however claimed that they were very aggressive in writing down their commercial real estate assets and selling them. Analysts were not convinced at the apparent failure to write down their commercial real estate, which should have revealed that the company would have to raise further capital.[7]

Lehman's claim about the size of its liquidity pool, some $45bn, the highest on record, was accepted by analysts and the markets. To bolster liquidity and to help the financial markets function more effectively, the Federal Reserve had established the Primary Dealer Credit Facility. This was an overnight loan facility to provide funding to primary dealers in exchange for any tri-party eligible capacity. Lehman had access to that and to the Term Securities Lending Facility, which allowed firms to swap certain types of agency collateral for Treasury securities. It was designed to increase liquidity in the funding markets by increasing the ability of dealers to obtain cash in the private market by enabling them to pledge securities temporarily as collateral for treasuries, which are relatively easy to finance. It was supposed to reduce the need for dealers to sell assets in illiquid markets, as well as preventing a loss of confidence amongst lenders. As well as being able to use these facilities, Lehman was also thought to have access to funds at the European Central Bank through Lehman Bankhaus AG as lenders of last resort.

However, although their bond research analyst was less concerned than others about Lehman Brothers, Citibank adopted a risk mitigation strategy in their dealings with the bank. Since it transacted regularly with Lehman globally, Citibank advised its traders' desks that they would not approve the extension of trades or long-term trades, as part of an effort to reduce their exposure to subprime and Alt-A loans. Citibank was Lehman's global securities clearing bank, with over $20bn of lines approved, and wanted to reduce the limits to about $12–13bn. Lehman agreed to maintain a 'good faith' deposit of $2bn. This is interesting, as the memorandum is dated 13 June, before the detailed announcement of results in its quarterly SEC 10-K on 16 June, yet it shows concerns about dealing with Lehman, despite its analyst's report.[8]

Using the Primary Dealer Credit Facility

Lehman was one of the first banks to use the Primary Dealer Credit Facility when it was announced, immediately after the rescue of Bear Stearns. The New York Federal Reserve Bank stated that the overnight funding was intended to provide funding for a 'specified range of collateral', including 'investment-grade corporate securities, municipal securities, mortgage-backed securities and asset-backed securities for which a price is available'. Richard Fuld, who had convened an emergency board meeting at the weekend, issued a statement on 18 March, stating that 'the Federal Reserve's decision to create a lending facility for primary dealers and permit a broad range of investment grade securities to serve as collateral improves the liquidity picture and, from my perspective, takes the liquidity issue for the entire industry off the table'.[9]

However, it appears that Lehman had no intention of sticking to investment grade securities. Lehman immediately seized the opportunity to dump illiquid assets, accessing the PDCF seven times in the liquidity stress period, describing these as 'tests' both internally and to third parties, although 'witnesses' from the Federal Reserve Bank of New York stated that these were instances in which Lehman drew upon the facility for liquidity purposes. In the same month, Lehman packaged 66 corporate loans to create the 'Freedom CLO'. It consisted of two tranches: a $2.26 billion senior note, priced at par, rated single A, and designed to be PDCF eligible, and an unrated $570m equity tranche. The loans that Freedom 'repackaged' included high-yield leveraged loans, which Lehman had difficulty moving off its books, and included unsecured loans to Countrywide Financial Corporation. On three occasions – 24, 25 and 26 March 2008 – Lehman pledged the Freedom CLO to the Federal Reserve Bank, New York on an overnight basis and received $2.13bn for each transfer, or $6.39bn in total.[10] Later, Chairman Bernanke commented that the Federal Reserve assessed the value of the collateral and imposed extra haircuts on the loans to the brokerage. The Federal Reserve was repaid in full.[11]

The New York Federal Reserve Bank was aware of the possible use of the 'Freedom CLO' on 20 March, since Jan Voigt of the FRBNY reports that

> during the same March 20 meeting, the Freedom CLO came up near the end of the conversation. We were surprised when they noted that their debt structure team had converted unencumbered corporate loans into an investment grade facility (pending rating review), with internal pricing assuming a range of 10–30 per cent haircuts on the underlying assets. The corporate loans had been financed using cash capital at the holding company level ... The Lehman management team also noted that while there was confusion about the purpose and utility of the PDCF, they saw this as an opportunity to move illiquid assets into a securitization that would be PDCF eligible. They also noted that they intended to create two or three additional PDCF eligible securitizations. We avoided comment on the securitization but noted the firm's intention to use the PDCF as an opportunity to finance assets they could not finance elsewhere.

Lehman did not intend to market its Freedom CLO or any other securitizations to investors. Indeed an internal presentation of Freedom CLO and subsequent securitizations was marked 'not meant to be marketed'. The Freedom CLO and other securitizations were specifically created to pledge to the PDCF, which Lehman treated as a 'warehouse' for its illiquid leveraged loans. It appears that the Federal Reserve Bank of New York was aware that Lehman 'intended to use the PDCF as both a backstop and a business opportunity ... to move illiquid assets into a securitization that would be PDCF eligible. We avoided comment on the securitization but noted the firm's intention to finance assets they could not finance elsewhere'.[12] It is also entirely clear that the Department of the Treasury knew what was happening. Phillip Swagel, then an assistant secretary to the Treasury, sent an e-mail to his colleagues, one of whom, Neel Kashkari, was an aide to Henry Paulson at that time, stating that 'Lehman has already done number 4 to game the PDCF – they securitized their illiquid CLOs and got a rating agency to say that some large fraction of it was investment grade. And then poof they get access to tens of billions of dollars from the Fed's PDCF'.[13] The 'Freedom CLO' was pledged three times before 9 April, when the Federal Reserve started talking to the bank about the CLO's underlying assets. Lehman received $2.13bn for each transfer, $6.39bn in total. The purpose was, of course, to make Lehman's balance sheet look better than it was. It is clear that Lehman's position regarding the PDCF was recognized at the highest levels, yet no further action was taken, apart from the provision of the cash.

The PDCF credit offered by the Federal Reserve was fully collateralized and, initially, eligible collateral was limited to investment grade securities. These included fixed income instruments and equity shares, unsecured debt issued by the Treasury, federal government agencies and government-sponsored enterprises, mortgage-backed securities and collateralized mortgage obligations issued by government-sponsored agencies and private corporations, and non-securitized loans granted to various borrowers. The list is a comprehensive one, but the weakness lay with the credit rating, which was defined as 'a composite credit rating for the pledge collateral based on ratings information used by the borrower's clearing bank'. But the Federal Reserve's acceptance of the clearing bank's valuation of the assets offered by the investment banks and others was marred by the fact that the clearing banks held similar assets themselves.

Willem Buiter, now Chief Economist at Citibank, commented:

> This arrangement is an invitation to primary dealers and their clearers to collude to rip off the Fed by overvaluing the collateral, including using false markets and/or internal pricing models as part of their range of pricing services (what are pricing services anyway?). They can then split the difference. If the Fed wants to be mugged, why not let the primary dealers themselves price the collateral they offer the Fed? For all collateral that is not priced in verifiable, liquid markets, the Fed should arrange its own auctions to discover the reservation prices of those offering the collateral. Leaving it to the clearers is a written invitation to be offered dross at gold valuations.[14]

That was the position when the facility was first introduced on 17 March 2008, but from 15 September 2008, collateral eligibility was extended to include a broad range of securities transacted in tri-party repurchase agreement transactions, including unrated securities.[15] The purpose was simply to provide overnight funding. The terms of the loans included a requirement that primary dealers would be subject to a frequency-based fee after they exceeded 45 days of use, which was based on an escalating scale. The Federal Reserve statement states that the facility was closed on 1 February 2010 and that 'all loans extended under this facility were repaid in full, with interest, in accordance with the terms of the facility'.

Lehman was not the only bank to make use of the facility. The data released by the Federal Reserve Bank in 2010 showed that Goldman Sachs, Morgan Stanley, Citigroup, Bank of America, JP Morgan Chase, and foreign banks such as Barclays, UBS and BNP Paribas had used the PDCF extensively.[16] Morgan Stanley borrowed from the PDCF 212 times between March 2008 and 2009, perhaps an indication of the difficulties the bank faced. Goldman Sachs used it 84 times and Bear Stearns used the facility almost daily from April 2008 to late June 2008, after JP Morgan bought the bank in March 2008 but before the extra funding from the government finished. Commercial banks such as Citibank and Bank of America also used the PDCF frequently. These two banks used it almost every trading day through its investment banking unit, with Citibank borrowing as much as $17.9bn in late November 2008 and Bank of America using it between 18 September and 12 May 2009, more than 1,000 times in total. At one time Bank of America borrowed $11bn in 2008, also taking almost $10bn on several occasions. A spokesman for Goldman Sachs pointed out that in late 2008, many of the US funding markets were clearly broken. 'The Fed took essential steps to fix these markets and its actions were very successful.'[17] The Bank of America took a similarly robust approach:

> The programs helped our customers, such as borrowers, auto dealers, depositors and money-market fund investors, continue to do business as usual despite virtually unprecedented disruptions in the financial markets. We have repaid, with interest, all of the borrowings except some of those whose terms have not expired.[18]

Lehman looks for buyers

As the markets continued to decline, and the financial services industry limped from one bleak quarter to the next, Lehman Brothers began to lay off another 1,500 members of staff in a fourth round of cutbacks, which would constitute about 6 per cent of the workforce. Lehman had already laid off 6,000 employees since June 2007. It was not alone in this, as job losses in banks and securities firms amounted to over 100,000 in 2008. The cutbacks for Lehman as well as other firms began in the mortgages and securitization businesses, but as the demand for merger advisory services, initial public offerings and debt underwriting began to decline, so the cutbacks spread to investment banking. As far as banking analysts were concerned, poor results for Lehman Brothers were expected, but they wanted to hear what the firm planned to do about its huge portfolio of troubled securities. In the days before the announcement of its third quarter results, Lehman's shares were very volatile, falling by 13 per cent on one day and rising by 16 per cent on another. Overall, however, the shares lost 73 per cent of their value over the period from the beginning of 2008.

Lehman had been urgently seeking bids for the company. What seemed a promising avenue was the possibility that the Korean Development Bank would come to the rescue. The KDB had visited New York in May to discuss the possible purchase of 50 per cent of Lehman Brothers, but had concluded the price was too high. Then the KDB proposed buying 25 per cent of Lehman Brothers together with private Korean financial institutions, but all the major financial institutions, such as Kookmin Bank, Woori Finance Holdings, Shinhan Financial Group and Hara Financial Holdings refused to join in a consortium, due to local economic uncertainties. Then Jun Kwang-woo, Chairman of South Korea's Financial Services Commission, whose approval of the purchase was required by the KDB, stated that the talks had ended. That was reported on the Dow Jones Newswire on 9 September. Lehman's shares fell by 38.1 per cent in early trading, recovering by 9.10 per cent by the end of the trading day.

Lehman's third quarter results

It was against this background that Lehman Brothers released their earnings report at 7.30 am on the morning of 10 September in an attempt to present the results in as favourable a light as possible, and to emphasize the actions they were taking to preserve their 'core' business. They needed to stem rumours about their liquidity after the talks with the Korean Development Bank had failed. Their press release was headed 'Lehman Brothers announces preliminary third quarter results and strategic restructuring'. The newly appointed chief finance officer, Ian Lowitt, sought to present the results in the best possible light, referring to the intense market pressure and scrutiny of their legacy residential and commercial real estate assets and speculation about their strategic alternatives. He pointed out that their total shareholder equity had increased in the third quarter by 8 per cent to $28bn, with net leverage reduced to 10.6 times from 12.1 times, and Tier 1 capital ratio approximately 11 per cent as compared with 10.7 per cent in the second quarter. Their commercial real estate and real estate held for sale had been reduced to $32.6bn, down from $39.8bn. 'Fair value' had been realized for buyers by providing 'lengthy asset-specific diligence on each position'.[19]

Part of the strategy was to move $25–30bn of commercial assets, including SunCal, a Californian land developer and Archstone, an apartment developer, into Real Estate Investments Global (REI Global), which would account for all its real estate assets on a hold-to-maturity basis, which would enable the new company to manage assets without mark-to-market volatility. Lehman would provide equity capital of 20–25 per cent and provide debt financing for 75–80 per cent of the total. The pool of assets was expected to generate cash flow of $5bn per annum for the next three to five years. The company had conducted extensive stress tests on the portfolio and was confident that there was sufficient equity to survive even under severe stress. Their residential mortgage exposures had been reduced from $24.9bn in the second quarter to $13.3bn in the third quarter. That figure included the sale of $4bn in UK residential assets, which Blackrock was due to sell. The remaining portfolio consisted of residential mortgages in various markets in Asia and Europe and included US Alt-A and subprime mortgages. Plans to sell a majority stake in parts of their investment management division were also announced, including the sale of Neuberger Berman. The result of all these changes, as Dick Fuld put it, would be a 'clean' Lehman, but the announcement referred to plans, not completed deals or agreements.

By 30 June, total stockholder equity was about $28bn and their long-term capital was $135bn. Gross assets had been reduced by 6 per cent to about $600bn and net assets by 5 per cent from $238bn to about $311bn. Lehman stated: 'Our third quarter Tier 1 ratio is well above our target level and the total capital ratio was well in excess of the 10 per cent minimum regulatory threshold.' However, the media and other analysts were not impressed by the plans proposed, or with the results.

Despite the efforts to focus on the firm's strategy, the media headlines on 10 September 2008 were that Lehman Brothers' earnings showed a loss of $3.9bn: 'Lehman Suffers Nearly $4bn loss' (*CNN Money*); 'Lehman Shares Plunge 45 per cent: Firm to Release Earnings Early' (*Washington Post*); 'A Battered Lehman Fights for Survival' (*New York Times*); 'Lehman Faces Mounting Pressure. Stocks Drop 45 per cent as Capital-Raising Talks Falter' (*Wall Street Journal*, 10 September, followed by 'Lehman's Revamp Plan Draws Doubters', 11 September). The *Wall Street Journal* commented that 'after suffering nearly $7bn in losses in the last two quarters, Mr Fuld was left with no choice but to shed most of Lehman's real-estate assets, sell half its money-management business and slash its dividend.'

The *Wall Street Journal* also quoted an analyst from the Bank of America Corp., who said that the plans might 'require Lehman to raise an additional $6bn in capital to plug further holes in its balance sheet', adding that its remaining $20bn in 'risk exposures are still too high to instil confidence that the worst is behind us'. Another analyst quoted by *CNN Money* pointed out that 'Lehman was being forced to make hard decisions now that the various options on the table have narrowed and balance sheet concerns start to bite'. In other words, the early presentation of the third quarter results and the conference call with its announcements of its strategy to restructure the bank did nothing to inspire confidence in the media or the market. The end would come within a few days.

The failures of the SEC's Consolidated Supervised Entity programme

Annette Nazareth, former SEC Commissioner, was reported as stating that:

> the investment banks requested consolidated supervision from the SEC and did not opt into the Federal Reserve's Financial Holding Company regime (even though the investment banks could have done this, and this would have satisfied the requirements of the EU Directive). Her view was that the investment banks didn't want bank-type supervision from the Federal Reserve. They wanted to be regulated by the SEC, which had been their functional regulator for 70 years.[20]

This does put the position as stated by Erik Sirri, Director of Market Regulation, Securities and Exchange Commission, in a somewhat different light, but does not undermine the basic point that proper regulation of the investment banks did not exist. In his testimony, Sirri pointed out that no regulator in the Federal Government was given explicit authority and responsibility for the supervision of investment bank holding companies with bank affiliates in the Gramm-Leach-Bliley Act. The five largest investment bank holding companies were ineligible because they had specialized bank affiliates. Goldman Sachs, Lehman Brothers, Merrill Lynch and Morgan Stanley owned Industrial Loan Companies, which accounted for 1.0, 0.6, 7.2 and 1.2 per cent respectively of the consolidated assets of each firm. Three of the firms, Lehman Brothers, Merrill Lynch and Morgan Stanley, also owned thrifts, which accounted for 3.3, 1.7 and 0.1 per cent of their assets respectively. There was at that time absolutely no provision in the law that required an investment bank to compute capital measures and maintain liquidity on a consolidated basis, nor did the law provide for a consolidated supervisor, who would be an expert in their core securities business.[21]

The point is that when Congress passed the Gramm-Leach-Bliley Act, it failed to give the SEC or any other agency the authority to regulate certain large investment banks. The CSE programme had no explicit statutory authority to require the investment banks in the programme to report their capital, maintain liquidity or submit to leverage requirements. Christopher Cox, then Chairman of the SEC, referred to the scheme as being entirely voluntary.

These requirements enabled Christopher Cox to argue that during the week of 10–17 March, 'Bear Stearns had a capital cushion well above what is required to meet the Basel standards', and that 'its consolidated capital and its broker-dealers' net capital exceeded relevant supervisory standards'. He added that 'what neither the CSE regulatory approach, nor any existing regulatory model, has taken into account is the possibility that secured funding, even if it is backed by high quality collateral, such as US Treasury and Agency securities, could become unavailable.'[22] Liquidity risk was not on the regulatory agenda. The SEC was not in a position to extend credit or liquidity facilities to any regulated entity. That was in the hands of the Federal Reserve.

Erik Sirri's stringent criticisms of the weak regulatory structure turned out to be entirely justified, but why was this situation not remedied by the regulatory authorities putting the case to Congress and seeking to extend existing laws appropriately? Typically, weak supervision leads to a bank taking undue risks and failing to maintain sufficient capital against a constellation of risks.

Robert Colby, deputy director of Market Regulation at the SEC, described their prudential regime as allowing the Commission to 'monitor for, and *act quickly in response to financial or operational weaknesses in a* CSE *holding company'* or any of its affiliates, which the SEC manifestly failed to do. Colby outlines the nature of the 'prudential regime' in some detail. The investment banks 'are required to maintain and document a system of internal controls', which the Commission must approve. The SEC must also examine the 'implementation of these controls'. The Commission was supposed to monitor the investment banks (the consolidated supervised entities (CSEs) continuously for financial and operational weaknesses; require the CSEs to compute a capital adequacy measure at the holding company that is consistent with the Basel Standard and ensure that the CSEs maintained significant pools of liquidity at the holding company. Such supervision looks impressive on paper, but the 'monitoring' largely consisted of monthly meetings with senior management and two members of the SEC staff on-site. Decisive enforcement action was entirely lacking.[23]

Erik Sirri's description of the rapid deterioration at Bear Stearns provides an interesting insight. The SEC confronted the rapid deterioration of liquidity at Bear Stearns during the week beginning 10 March 2008:

> This was the first time that a major investment bank that was well-capitalized and fully liquid experienced a crisis of confidence that resulted in a loss not only of unsecured financing but also short-term financing. This occurred even though the collateral it was able to provide was high quality, such as agency securities and had a market value that exceeded the amount to be borrowed.[24]

The impression given is that it was simply rumours about liquidity problems at the firm, which intensified during that week. There appears to have been no specific event which gave rise to them, although factors included 'naked' short selling and a rapid rise in activity involving credit default swaps. These intensified when some over-the-counter derivatives counterparties sought to replace their trades with the company by entering into new contracts with other dealers. Then some of Bear Stearns' prime brokerage clients decided to move their cash balances elsewhere, which obviously influenced other market participants. Ultimately, counterparties would not deal in derivative transactions with Bear Stearns, and lenders would not lend stock or enter into tri-partite repurchase agreements with the company. By 15 March, Bear Stearns had to either file for bankruptcy or be acquired by another company.

What seems to be left out of these accounts is the context in which the 'rumours' occurred. After all, in 2007, it had not been rumours about the two hedge funds, the High-Grade Structured Credit Fund and the Credit Enhanced Leverage Fund managed by Bear Stearns Asset Management, which had led to their near collapse. Bear Stearns had tried to raise about $3.2bn in loans to bail out the larger fund. In the end, Bear Stearns lent the High Grade Fund $1.5bn, which, it was thought, could help it meet its margin calls while it liquidated its position. It also suspended redemptions from the fund. The company also had to advise investors in the funds that it was suspending redemptions. On 17 July, investors were advised that the Credit Fund had lost over 90 per cent of its value, leaving about $1bn dollars, and that the Credit Enhanced Leverage Fund had lost virtually all of its investor capital. On 31 July the two funds had filed for Chapter 15 bankruptcy. It was widely acknowledged at the time that their collapse was due to the slump in the housing market and the continuing fall-out from the subprime mortgages.

That led to the first quarterly loss for the three months ended in November 2007. In other words, it was obvious that Bear Stearns was exposed to the subprime market through increasingly illiquid mortgage-backed securities and collateralized debt obligations (CDOs), and that there had been serious management failures as well as too little capital.

Looking at what actually happened with Bear Stearns and then with Lehman, the question which immediately arises is: where exactly was the SEC? What had they been doing over the past four years? Had anyone carried out any of the supervisory activities so carefully described by Mr Colby? Chairman Cox appeared to believe that all was well. He described Bear Stearns as a 'well-capitalized and apparently fully liquid major investment bank that experienced a crisis of confidence, denying it not only unsecured financing, even when the collateral consisted of agency securities with a market value in excess of the funds to be borrowed.'[25]

A few months later, Chairman Cox was to declare that the programme was 'fundamentally flawed from the beginning', which he attributed to its being a voluntary scheme, although it was not entirely voluntary, given the European Union dimension. Its flaws lay elsewhere. It was an attempt to fill a regulatory gap, but one which left the SEC without the statutory powers it needed. The SEC's regulations exempted the five largest investment banks from the net capital rule, a 1975 rule for computing the minimum capital standards at broker-dealers. The investment banks were allowed to use their own mathematical models of asset and portfolio risk to compute their appropriate capital levels in accordance with Basel II rules. As a result, leverage ratios rose sharply from their 2004 levels, as the banks' models indicated that they had sufficient capital, being allowed to increase to 40:1. Basel II relies heavily on credit ratings to assess the quality of the capital held, and did not really take short-term secured lending into account. The rules did not charge for illiquid trading positions at the brokers, did not control overnight funding, nor did they limit leverage. Short-term funding of the balance sheet by tri-party repo agreements, structured demand notes and short-dated commercial paper increased as a source of funding without any interventions by the SEC. Instead the SEC applied the Basel II ratios in a rather mechanistic way, assuming that the Basel capital ratio of 10 per cent was sufficient, and hence there had been no anxieties when Bear Stearns' capital ratio decreased from 21.4 per cent to 11.5 per cent between April 2006 and March 2008. For the CSE programme, part of the problem lay in the awkward combination of a mission that stressed *ex post* enforcement over *ex ante* prudential guidance and its non-statutory nature, which left it without enforcement tools.

On 25 September 2008 David Kotz, the SEC's Inspector General, issued a controversial report, 'Audit of SEC's Oversight of Bear Stearns and Related Entities:

The Consolidated Supervised Entity Programme.' Here, it is important to note the management's response, even though the SEC's Trading and Market Division accepted all of the Recommendations in the Report, except Recommendations 13, 15 and 16. For example, the Report claims with regard to Bear Stearns that, although the Trading and Markets (TM) division became aware of the firm's concentration of mortgage securities, high leverage, shortcomings of risk management in mortgage-backed securities, and lack of compliance with Basel II standards, no action was taken to limit these risk factors. No leverage ratio limit for CSE firms was required. The senior management of the SEC and the TM division, which had the prime responsibility for regulating and supervising the investment banks, insisted that the Inspector General both misunderstood the nature of the regulations and had not consulted with the senior officials, a claim which the Inspector General firmly rejected.[26] In response, the Inspector General pointed out that 'over the five months of fieldwork, OIG auditors had weekly and sometimes daily conversations with TM management, including senior officials, on all issues relating to the audit work. In many cases, TM management did not provide full responses to questions posed and issues raised by the OIG.'[27] Despite such disagreements, TM accepted 20 of the 23 recommendations addressed to them in the report, although TM often states that the recommendation is based on misunderstandings, or is 'fundamentally flawed', or the work is already in progress.

TM rejected Recommendation 13 regarding an internal and external communications strategy as not being a regulatory requirement, although, perhaps an effective strategy of this kind might have helped Bear Stearns during the crisis. Recommendation 16 recommended that TM should complete the inspection process before allowing another consolidated supervised entity to use the alternative capital method, although TM explained that the SEC was clearly informed of the findings before that status was granted.

The SEC's Corporate Finance (CF) division accepted only one of the recommendations but rejected the other two which involved establishing guidelines for the timeliness of reviewing reports on the grounds that Bear Stearns had released in its filings (10-Q, 8-K and 10-K) in October, November and December 2007 and January 2008, improvements in its disclosures about subprime mortgage securities in response to CF's comment letter of September 2007. Similar letters were sent to Goldman Sachs, Morgan Stanley, Lehman Brothers and Merrill Lynch well before the end of their fiscal years. Comment letters and responses were posted 45 days after the completion of a filing review.

However, in his response the OIG points out that, although the CF was correct in pointing out that its approach to timeliness was dictated by the requirements of section 408 of the Sarbanes-Oxley Act 2002, this still meant that reviews of high-risk companies should be carried out more quickly. Its 2006 10-K filing showed the high risks of the company, since it indicated the company's exposure to subprime loans.

Despite all the controversy surrounding the Report, it did show the weaknesses in the SEC's management of the CSE programme. It is clear from other evidence that the CSE programme was understaffed, given the size and complexity of the companies involved. It had ten to twelve people in teams of three (with some overlap) to monitor risk at the five investment banks and also at Citibank and Chase. The main focus was on the holding companies, but since Citibank and Chase were refused exemption from the net capital rule, the SEC relied on the Federal Reserve to regulate them. The CSE staff would take reports received from the CSEs at face value and 'work from there'. The CSE staff did not perform audits or in-depth examinations, but verified the Basel II calculations (for example, the capital the investment banks had), verified the controls, analysed and questioned the management of these banks. At first, examinations were conducted by the SEC's Office of Compliance Inspections and Examinations, which seemed to be more concerned with finding violations than checking controls. Perhaps owing to tensions between the two divisions, TM division was given authority to conduct examinations and hire additional staff. The numbers of CSE staff remained too small to supervise the five investment banks, which between them controlled over $4 trillion in assets.[28] The SEC's then head of Market Regulation, Annette Nazareth, had promised to hire highly skilled supervisors to assess the riskiness of the investment banking activities, but did not. Instead, economists and financiers were added to the team. When Christopher Cox became Chairman in 2005, he closed the risk management office and the SEC did not complete a single large-scale inspection of a major investment bank during the eighteen months leading up to the collapse. In her interview with the Financial Crisis Inquiry Commission (FCIC), Annette Nazareth indicated that they had observed the trends towards subprime mortgages but had not seen how the quality of the underlying assets had changed. Their focus had been on the liquidity of the investment banks, not the extent of the leverage.[29]

The SEC adopted Basel II in terms of the minimum capital requirement, based on the use of the investment banks' internal models and risk management structures. The SEC required full information about the affiliates of the broker-dealers, financial and risk information about holding companies, affiliates of broker-dealers, and certain off-balance sheet items of broker-dealers, their holding companies, and their affiliates through risk assessment rules and meetings with and reports from members of the Derivatives Policy Holding Group. The CSE was required to compute group-wide capital and allowances for market, credit and operational risk, on a monthly and quarterly basis. It was also required to implement and maintain a consolidated and comprehensive internal risk management control system and procedures to monitor and manage group-wide risk, including market, credit, funding, operational and legal risks. That was all subject to Commission Review. Then, along with the tentative net capital requirements, the CSE was able to use its own internal mathematical models to calculate some of its market and credit risk charges for risk measurement, including internally developed value-at-risk models or scenario analysis. The CSE was obliged to adhere to strict rules regarding its group-wide risk management control, designed to ensure the integrity of risk measurement, monitoring, and management process, and to clarify accountability, at the appropriate organizational level, for defining the permitted scope of activity and level of risk.

Both Bear Stearns and Lehman Brothers apparently complied with Basel II on paper. But both acted in such a way that questionable levels of capital were maintained. Bear Stearns had a system whereby each division of the company used separate VaR numbers for each portfolio of assets. This inconsistency in VaR numbers prevented adequate enterprise-wide risk assessments from being made; indeed, the system allowed Bear Stearns to choose the most favourable VaR numbers for calculating its capital charges. Nor did the company mark down stressed assets, in order to avoid the inevitable capital charges.[30]

Some of the SEC's internal memoranda of the Risk Management Reviews make it clear the SEC knew what was going on. In April 2006, staff commented that 'problems are surfacing at subprime originators. The CSEs purchase whole loans with the intention of securitizing them, but are having difficulty in arranging "put backs"', that is, returning the defective loans to subprime originators. It was also noted that Bear Stearns had a 'significant amount of loans in inventory with outstanding claims with a disproportionate number involving a relatively small number of originators'. But the SEC decided to 'follow up on the corrective action taken in this area', rather than require any action and a specific timetable.

Having adopted Basel II, the SEC should have been equally clear about its Second Pillar, the Supervisory Review Process. Although the evidence of the SEC's supervision is somewhat unclear, it is doubtful that the full application of the review process could have been undertaken, given the demands of the process and the lack of staff or that the nature of the supervisory process was understood or that the recommendations for action were not part of the SEC's CSE programme. In stressing the importance of the supervisory review, Basel points out that supervisors are expected to evaluate how well banks are assessing their capital needs relative to their risks and 'to intervene where appropriate'. Increased capital is not the only option, and 'strengthening risk management', applying internal limits, strengthening the level of provisions and reserves, or improving internal controls, must be considered, and, indeed, required of banks. Liquidity risk is also noted, with the requirement that banks should have adequate systems for measuring, monitoring and controlling liquidity risk, and should evaluate the adequacy of their own capital, given their own liquidity profile and the liquidity of the markets in which they operate. Later the SEC would claim that lack of liquidity was the cause of the collapse of Bear Stearns and Lehman Brothers, but little attention seems to have been paid to this issue by SEC staff as far as the CSEs were concerned. The programme required regular inspections of the banks' management systems, but the SEC failed to use its powers to enforce compliance.

The SEC did not even inspect the VaR models before approval, and never issued a formal approval of Bear's VaR modelling. The internal memoranda reviewed by the OIG indicate that the SEC was aware of the problems, but accepted management's agreement to improve them.[31] At each meeting throughout 2006, Bear Stearns required a separate discussion; for example, in October 2006, it was noted that the Mark-to-Market Committee had asked for a complete review of the firm's mortgage residual positions, adding that 'due to the magnitude of these positions, we have asked for a detailed briefing', but that was all. By January 2007, the SEC noted that several CSE firms had 'potential credit exposures to subprime originators that have failed or are in distress through warehouse lending facilities'. The possibility of a credit loss existed if they were unable to repurchase the loans or provide other collateral. The increase in default and delinquency rates for subprime notes was noted. The situation at Bear Stearns worsened in 2007, when the firm absorbed a $58m. writedown on mortgage assets in January and the managers advised the SEC that 'these events reflect a more rapid and severe deterioration in collateral than anticipated'.[32]

The reviews required under Basel II all lead to 'supervisory action', which, in the first instance, means that the bank has to demonstrate that it has carried out all the changes set out by the supervisor. Penalties follow if the bank has failed to implement the necessary changes. But there is no evidence that the CSEs were required to agree to substantial changes in risk management, nor of any penalties.[33] In the case of Bear Stearns, there had surely been sufficient cause for concern and action following the collapse of its two hedge funds in July 2007 and then its reported losses, its first quarterly loss in its eighty-four-year history, which included a $1.9bn write-down on its holdings of mortgage assets, followed by substantial falls in its share prices. Inaction with regard to Lehman Brothers will be set out in the following chapters.

Looking back on it all, Mary Shapiro, who became Chairman of the SEC in January 2009, accepted the inadequacies of the CSE programme, due in part to a 'siloed financial regulatory framework that lacked the ability to monitor and reduce risks flowing across the regulated entities and markets; and the lack of an adequate statutory framework for the oversight of large investment bank holding companies on a consolidated basis'. She added that

> [the] consolidated oversight of these holding companies was more prudential in nature than SEC's traditional rule-based approach for broker-dealer regulation ... a profoundly different approach to oversight and supervision for the Commission. Properly executing the programme called for a correspondingly significant expansion in human, financial, technological and other resources devoted to the oversight and examination of the CSE holding companies and their subsidiaries.[34]

She and others have stated that the SEC was not a prudential regulator, which is undoubtedly true, but this simply emphasizes the fact that regulation of the investment banks was taken far too lightly by all the banking regulators. Mary Shapiro became Chairman of the SEC on 27 January 2009, and, although she had many reservations about the Office of the Inspector General's report, she instituted a wide range of reforms to the Commission's structure. These included modernization of the SEC's technology and upgrading of its case management system, the creation of specialized enforcement units, a successful enforcement programme and new corporate disclosure units. She also brought in experts in risk management and created the agency's first Office of the Chief Operating Officer, to name but a few. She stepped down in December 2012.[35]

However, whether or not the Inspector General's report was wholly accurate or not, whether or not the SEC had sufficient resources or was prepared to take decisive action, or whether or not the SEC was sufficiently aware of the changing circumstances surrounding the investment banks as the subprime mortgage market began to collapse, all went by the board. The day after the publication of the Report, Christopher Cox, then Chairman of the SEC, announced the abandonment of the Consolidated Supervised Entities programme, blaming the lack of an explicit supervisory authority to require the five investment banks to report their capital, maintain liquidity, or submit to leverage requirements and on the fact that it was a voluntary scheme (despite the EU requirements already described). The programme ended on 26 September, the day after the publication of the report.[36]

Immediately after the forced sale of Bear Stearns, Chairman Cox wrote to the then Chairman of the Basel Committee on Banking Supervision, Dr Nout Wellink, about 'Sound Practices for Managing Liquidity in Banking Organizations'. He provided data on Bear Stearns which showed that its capital and its broker-dealers' capital 'exceeded supervisory standards. Counterparty withdrawals and credit denials, which resulted in a loss of liquidity – not inadequate capital – caused Bear's demise.'[37] This was disingeneous, to say the least. Interestingly enough, the then CEO of Bear Stearns offered exactly the same explanation in his statement to the Senate Banking Committee when he stated that 'during the week of March 10, even though the firm was adequately capitalized and had a substantial liquidity cushion, unfounded rumours and attendant speculation began circulating in the market that Bear Stearns was in the midst of a liquidity crisis'. The 'impetus for the run on Bear Stearns was . . . a lack of confidence, not a lack of capital or liquidity'.[38] It is unusual for the regulator and the regulated to agree, almost word for word, on the failure of a regulated company, as happened in this case.

On the issue of liquidity, the CSE programme was designed to ensure that, in a stressed environment, a firm could withstand the loss of its unsecured financing for up to a year, on the assumption that secured funding for its liquid assets would be available. It also assumed that any assets in the regulated entity could not be used elsewhere in the conglomerate. These guidelines were insufficient and it appears that Bear Stearns was aware of that, so the firm's liquidity planning involved developing a 60-day cash inflow and outflow analysis to track cash flows on a daily basis. This analysis did not assume that secured funding was always available, but assumed the existing credit lines would not be withdrawn. The firm therefore realized that the one-year period was unrealistic and that secured funding might not be available in times of stress. This may have helped the company in 2007, but was not sufficient in March 2008.[39]

That was not the only weakness in the CSE programme. Chairman Cox described what happened to Bear Stearns as unprecedented, describing the bank as being 'well-capitalized and apparently fully liquid', yet it found itself being denied 'not only unsecured financing, but also short-term secured financing even when the collateral consisted of agency securities with a market value in excess of the funds to be borrowed.' These decisions by counterparties and prime brokerage clients in turn influenced others to reduce their exposure to Bear Stearns.[40] Bear Stearns' capital, according to the CSE programme monitoring, was well above the requirements of Basel II. Cox declared that 'capital is not synonymous with liquidity', but in times of stress, the ability of a securities firm to withstand market, credit and other types of stress events is linked to the amount of capital, but, in addition, the firm also needs enough liquid assets in the form of US Treasuries and other high-quality instruments to meet its financial obligations. The CSE programme also required substantial liquidity pools and funding procedures so that the holding company had enough stand-alone liquidity to meet its expected cash flows in a stressed liquidity environment. The loss of liquidity to Cox was entirely unprecedented, and obviously came as a shock. He added that 'Bear's extensive participation in a wide range of critical markets meant that a chaotic unwinding of its positions could have cast doubt on the financial positions of some of Bear Stearn's thousands of counterparties, placing additional pressures on the financial system.' That was in April 2008, and Chairman Cox was entirely oblivious to the approaching storm.

Cox was correct to refer to the link between capital and liquidity, since a bank's capital base and its holdings of liquid assets enable the bank to withstand certain types of shocks. But he should have been aware of the general principles. A bank should hold a buffer of liquid assets to mitigate against the risk of liquidity crises caused where other sources of funding dry up. The assets which a bank holds includes loans, such as mortgages, lending in the wholesale market, secured or unsecured together with liquid assets. A bank should hold a buffer of liquid assets, such as cash, central bank reserves and government bonds, which should be increased if the bank has invested in risky assets. Liquidity is linked to both sides of a bank's balance sheet, relating to the mix of assets a bank holds and the various sources of funding for the bank, in particular, the liabilities which should in due course be repaid. Banks may face two kinds of liquidity risk: insufficient cash or collateral to make payments to its counterparties or customers as they fall due, and market liquidity risk. The latter is the risk that an asset cannot be sold in the market quickly, or, if quickly, then only at a heavily discounted price. Instead of a concern about general principles, Chairman Cox and his staff should have been aware of the nature and extent of the assets held by Bear Stearns and Lehman Brothers, but they were not. It was the quality of the assets which initially caused the run on both banks.

Lehman had invested extensively in mortgages – even in 2007, when the cracks in the housing market began to appear. It underwrote more mortgage-backed securities than any other firm, accumulating an $85bn portfolio, four times its shareholders' equity. Its leverage ratio was 31 in 2007, but its vast mortgage securities portfolio made it vulnerable to deteriorating market conditions. Bear Stearns' was the second largest portfolio, and was subject to the same issues until it was bailed out. Nor was it just the risks involved in poor-quality assets, but the extent of the leverage of all the five large investment banks. But as the Joint Economic Committee pointed out in its analysis of the financial meltdown,

> To achieve the high returns on equity to which the independent investment banks were accustomed, the leverage ratio at independent investment banks ballooned relative to the average leverage ratio at commercial banks and savings institutions. At the end of the first quarter in 2008, the leverage ratios at Morgan Stanley, Lehman Brothers, Merrill Lynch and Goldman Sachs were 31.8, 30.7, 27.5 and 26.9 respectively, compared with an average of 8.8 for all U.S. commercial banks and savings institutions.[41]

That was always high, but between 2004 and 2007, the average ratio of assets to equity rose from 25:1 to 30:1. If the SEC was aware, no action was taken. Small wonder that Chairman Cox abruptly ended the CSE programme on 26 September 2008.

Later, Chairman Bernanke would admit to the regulatory failures, but the initial problem was that he did not appreciate the impact of the increases in subprime lending and the abandonment of sensible underwriting standards. He described the advantages of subprime lending as making 'homeownership possible for households that in the past might not have qualified for a mortgage and has thereby contributed to the rise in homeownership [from 65 per cent in 1995, reaching 69.2 per cent by the first quarter, 2005, falling back to 63.9 per cent in the fourth quarter, 2014].' But by May 2007, as the Federal Reserve observed the continued rise in delinquencies and foreclosures in subprime mortgages, Bernanke concluded that together with other regulators and Congress, the Federal Reserve 'must evaluate what we have learned from the recent episode and decide what additional regulation or oversight might be necessary to prevent such an occurrence ... but, at the same time, we do not want to curtail subprime lending or close off options that would be beneficial to borrowers'.[42] By August 2007, Bernanke seemed to have recognized that the situation was more serious that his earlier, somewhat complacent assessment. He referred to the 'marked deterioration in the performance of the subprime mortgage market', to the intensification of investors' concerns about mortgage credit performance, and the declines in investor demand for asset-backed commercial paper and unsecured commercial paper. He did not, however, see any of this as requiring any action on the part of the Federal Reserve:

> It is not the responsibility of the Federal Reserve ... to protect lenders and investors from the consequences of their financial decisions. But developments in financial markets can have broad economic effects felt by many

> outside the markets and the Federal Reserve must take these into account when determining policy.

In its 7 August meeting, the Federal Open Market Committee reiterated its view that inflation was its predominant policy concern, but just ten days later the Federal Reserve Board cut its discount rate by 50 basis points and allowed for term financing for as long as thirty days, renewable by the borrower.[43] These speeches show that Bernanke was slow to recognize the enormity of the problems facing them. Reflecting on the financial crisis long after the event, he realized that other and more forceful actions should have been taken. The Joint Economic Committee refers to the beginning of the global financial crisis on 9 August 2007, when 'both commercial and investment banks incurred significant credit losses on subprime residential mortgage loans and write-downs on subprime RMBSs and tranches of CMOs'.[44]

In a speech to the American Economic Association on 3 January 2010, Chairman Bernanke admitted the serious failures of regulation and supervision, which should have focused on problems with underwriting practices and lenders' risk management, since these 'would have been a more effective and surgical approach to constraining the housing bubble than a general increase in interest rates'.

In his testimony to the Committee on Financial Services, later in the same year, Bernanke's views about the role of the Federal Reserve in banking supervision actually shows some of the major failings of banking supervision with references to the need to adopt a multi-disciplinary approach in order to 'better understand the linkages between firms and markets' using horizontal reviews that look across a group of firms to identify common sources of risks and best practices for managing those risks, and the use of models and data analysis to identify vulnerabilities at the firm level and for the financial sector as a whole.[45] It was the lack of understanding of the linkages which led to the calamitous decision to allow Lehman Brothers to fail.

One can only speculate on what might have been if the Big Five investment banks had been placed under the Federal Reserve's Consolidated Supervision in 2004. All the blame for the collapse of Bear Stearns, Lehman Brothers and the rescue of Merrill Lynch cannot be laid at the door of the regulators. In all cases the banks brought their downfall on themselves.