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Long-Term Capital Management: A Retrospective—Part I

Paul L. Lee*

This article provides a retrospective on the occasion of the twentieth anniversary of the near failure of Long-Term Capital Management in September 1998. This article highlights elements of the Long-Term Capital Management story that provided warnings of some of the forces that would contribute to the near collapse of the U.S. financial system in September 2008.

The tenth anniversary of the harrowing events of September 2008 is nearly upon us. It will undoubtedly be marked by retrospectives, reassessing the causes of the near collapse of the U.S. financial system and the extraordinary actions taken by the U.S. authorities to forestall a further descent into chaos. The anniversary of the events of September 2008 will be observed even as actions are being taken to ease certain of the regulatory constraints imposed in the aftermath of the 2008 financial crisis, particularly those imposed by the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act"). As history affirms, receding memories of a financial crisis lead to an easing of regulatory measures adopted in response to the crisis.

For a longer-term perspective on the 2008 financial crisis and the regulatory response, it may be helpful to consider another anniversary that will be observed in September 2018. That is the twentieth anniversary of the near failure of Long-Term Capital Management, L.P. and its fund, Long-Term Capital Portfolio, L.P. (collectively "LTCM"). The near failure of LTCM, the largest hedge fund then operating in the United States, provided a preview of some of the forces that would contribute to the near collapse of the U.S. financial system in September 2008. The fears stalking the financial markets in August and September of 1998 were a precursor of the fears that would nearly overwhelm the markets in September of 2008. In August and September of 1998, market fears were also all consuming. Secretary of the Treasury Robert Rubin was quoted at the time as saying that "the world is now experiencing its worst financial crisis in 50 years," and Chairman of the Federal Reserve Board Alan Greenspan said that "he had never seen anything in his lifetime that

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compared to the terror of August 1998."[1] Ironically, the success of the U.S. authorities in minimizing the effects of the near failure of LTCM and the effects of other market disruptions in the 1990s may have lulled the markets and the authorities themselves into a false sense of confidence in their ability to manage future crises.[2]

Significant failures in risk management by LTCM and, more importantly, by many of its large and sophisticated counterparties, were highlighted by the LTCM episode as were regulatory gaps for certain financial practices and products such as over-the-counter ("OTC") derivatives. A retrospective on the events of September 2008 may be aided by providing a retrospective on the events of September 1998.[3] The events of September 1998 did not involve to any significant extent subprime mortgage-backed securities, other types of securitization products, or credit default swaps, all of which were significant factors in the 2008 financial crisis. Nonetheless, the events leading to the financial crisis in September 2008 suggest that lessons from the risk management failures and other regulatory gaps evidenced by the LTCM case may not have been adequately internalized either by the market participants or by the regulators after the LTCM episode. The lessons drawn from the LTCM episode included the risks related to excessive leverage, opaque off-balance-sheet exposures particularly in the OTC derivatives market, and the inadequacy of internal models in capturing and measuring risk. These risks all reappeared and

[1] Michael Lewis, *How the Eggheads Cracked*, N.Y. Times, Jan. 24, 1999, https://www.nytimes.com/1999/01/24/magazine/how-the-eggheads-cracked.html.

[2] *See, e.g.*, Janet L. Yellen, Vice Chair, Bd. of Gov. of the Fed. Res. Sys., *Macroprudential Supervision and Monetary Policy in the Post-Crisis World* (Oct. 11, 2010), https://www.federalreserve.gov/newsevents/speech/yellen20101011a.htm (noting that the successes in managing the Asian financial crisis in 1997, the LTCM failure in 1998, and the stock market crash in the early 2000s may have contributed to a false sense of confidence among government authorities). The role of the U.S. authorities in managing through a succession of financial problems in the 1990s was graphically conveyed on the cover of *Time* magazine in February 1999. The cover story, entitled "The Committee to SAVE the World," featured a photograph of Robert Rubin, Alan Greenspan, and Larry Summers with the subtitle "The inside story of how Three Marketeers have prevented a global economic meltdown—so far." Time, Feb. 15, 1999, http://content.time.com/time/covers/0,16641,19990215,00.html.

[3] A leading chronicler of the LTCM story offered an initial retrospective on the events of September 1998 in early September 2008. Roger Lowenstein, *Long-Term Capital: It's a Short-Term Memory*, N.Y. Times, Sept. 6, 2008, https://www.nytimes.com/2008/09/07/business/07ltcm.html. Another article published in April 2007 just before the first signs of the financial crisis emerged also sought to draw lessons from the rescue of LTCM. *See* Joseph G. Haubrick, *Some Lessons on the Rescue of Long-Term Capital Management*, Federal Reserve Bank of Cleveland, Policy Discussion Paper No. 19 (2007).

were the significant factors in the 2008 financial crisis.[4] It seems appropriate to revisit the studies and analyses conducted in 1998 and 1999 following the LTCM episode and the actions taken by the market participants and the regulators to see if they resulted in a robust enough response. This article thus offers its own retrospective on the LTCM episode, the regulatory responses or lack thereof, and the indications of continuing risks in the financial system.

A BRIEF HISTORY OF THE BRIEF HISTORY OF LTCM

LTCM was founded in February 1994 by John Meriwether, former vice chairman and head of bond trading at Salomon Brothers, together with other former bond trader colleagues from Salomon Brothers. Other prominent principals of LTCM included David Mullins, Jr., former vice chairman of the Federal Reserve Board, and perhaps even more illustriously, Robert Merton and Myron S. Scholes, academicians who would in 1997 be awarded the Nobel Prize in economics for their pioneering work in developing the Black-Scholes model for valuing options. The Black-Scholes model served as the basis for virtually all of the valuation modeling by the financial industry for derivatives. LTCM collapsed in September 1998 after a brief but spectacular run.[5]

LTCM'S INVESTMENT STRATEGY

The core investment strategy pursued by LTCM was "relative-value" or "convergence-arbitrage" trades. The strategy sought to take advantage of small differences in prices between two related securities in the belief that the price gap between the two securities would converge over time.[6] To implement this

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[4] *See, e.g.*, The Financial Crisis Inquiry Report, Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States, xv–xxviii (2011) [hereinafter Financial Crisis Inquiry Report].

[5] The most extensive recountings of the LTCM story are provided in two sources: Roger Lowenstein, When Genius Failed: The Rise and Fall of Long-Term Capital Management (2011) & Nicholas Dunbar, Inventing Money: The Story of Long-Term Capital Management and the Legends Behind It (2001). The President's Working Group on Financial Markets issued a report entitled "Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management" in April 1999 relating to LTCM and hedge fund operations more generally. The United States General Accounting Office issued a report in October 1999 on LTCM entitled "Long-Term Capital Management: Regulators Need to Focus Greater Attention on Systemic Risk." A series of Congressional hearings were also held in 1998 and 1999 analyzing the LTCM episode and the hedge fund industry. This article draws principally on these public sources for the background on the LTCM episode.

[6] The President's Working Group on Financial Markets, Hedge Funds, Leverage, and The Lessons of Long-Term Capital Management 10 (1999) [hereinafter PWG Report].

strategy, LTCM would typically take long positions in the "underpriced" less liquid securities and short positions in the "overpriced" more liquid securities. In its convergence trades, LTCM was betting in general that liquidity and credit spreads between the securities would narrow.[7] Instead, these spreads widened in almost all markets as a result of a "flight to safety" in the aftermath of the Russian government default in August of 1998. This flight to safety (and liquidity) resulted in large losses for LTCM on its convergence trades.[8] The firm also pursued other investment strategies, such as "directional" trades involving equity options, takeover stocks, and emerging market debt. LTCM experienced significant losses in these strategies as well beginning in May and June of 1998. Convergence trades were generally regarded by the market as less risky than directional trades. For LTCM all its trades would eventually prove to be very risky.

Because the relative value or convergence arbitrage strategy relied on taking advantage of small differences in prices between two securities, it required large positions to produce attractive returns. LTCM's balance sheet standing at $125 billion in September 1998 was nearly four times the next largest hedge fund.[9] Most of its balance sheet was financed through repurchase agreements ("repos").[10] LTCM was not only the largest hedge fund, but also the most highly leveraged hedge fund reporting to the Commodity Futures Trading Commission (the "CFTC").[11] The President's Working Group on Financial Markets (the "President's Working Group") said that LTCM's leverage ratio in

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[7] *Id.* at 16.

[8] On its convergence trades, LTCM lost money on both its long positions and its short positions, positions that were intended to be offsetting. *See OTC Derivatives: Hearing Before the S. Comm. on Agriculture, Nutrition & Forestry*, 105th Cong. 46 (1998) (statement of Martin Mayer, Brookings Institution). *See also* Richard Bookstaber, A Demon of Our Own Design: Markets, Hedge Funds, and the Perils of Financial Innovation 101–102 & 120–123 (2007) (describing the risks that relative value or convergence trades ultimately presented for LTCM).

[9] PWG Report, *supra* note 6, at 14.

[10] *Id.* at 11. LTCM could readily finance most of its balance sheet through repos because 80% of its balance sheet consisted of government bonds issued by the U.S. and other G-7 countries. *Id.* at 14. LTCM sought to protect its funding position by using term repos with maturities of 6 to 12 months, along with a back-up line of credit from a bank syndicate. *See* Philippe Jorion, *Risk Management Lessons from Long-Term Capital Management*, 6 Eur. Fin. Mgmt. 277, 280 (2000).

[11] PWG Report, *supra* note 6, at 14. LTCM was registered as a commodity pool operator with the CFTC and subject to certain reporting requirements with respect to its futures positions. Its OTC derivative activities were not subject to reporting or other requirements with the CFTC.

January 1998 of 25-to-1 "implie[d] a great deal of risk."[12] As LTCM experienced losses during the course of 1998, its leverage ratio increased to 50-to-1 and ultimately to more than 100-to-1. Even more significantly, LTCM had large off-balance-sheet positions in futures, options, and OTC derivatives in a gross notional amount of approximately $1.4 trillion, further increasing its economic leverage. LTCM held large relative positions in various markets such as on U.S. and foreign futures exchanges as well as large positions in specific securities, some of which were very illiquid.[13] The President's Working Group concluded that LTCM was distinguished not only by its leverage, but also by the large size of its positions in certain markets, which made exiting the positions even more difficult during August and September of 1998.[14]

MINIMAL DISCLOSURE MODEL

LTCM pursued a minimal disclosure approach in dealing with its lenders and counterparties. LTCM had approximately 75 counterparties on its repo and reverse repo transactions, 50 counterparties on its OTC derivatives transactions, and several dozen banks on its credit facilities. The balance sheet and income statements that LTCM provided to its lenders and counterparties were not particularly informative because they did not provide information on LTCM's large off-balance-sheet exposures or its concentration of risk in certain markets and strategies.[15] The President's Working Group concluded that along with its high degree of leverage, the opaqueness of LTCM's risk profile, particularly through its very large off-balance-sheet positions, and the low degree of external monitoring by its counterparties were key parts of the problem at LTCM.[16] Even by the prevailing standards in the hedge fund industry, LTCM stood out for the minimal level of disclosure it made to its counterparties. Speaking of LTCM, the Chairman of the House Banking Committee said that "the country's most sophisticated banking institutions provided loans to an institution that shielded its operations in secrecy, depriving lenders and their regulators data about its positions or other borrowings."[17] It may have been as much the mystique attaching to the star quality of the organizers of LTCM as its secrecy (a trait common among hedge funds) that distinguished LTCM from

[12] *Id.* at 12.

[13] *Id.*

[14] *Id.* at 11–12.

[15] *Id.* at 14.

[16] *Id.*

[17] 144 Cong. Rec. H10652 (daily ed. Oct. 12, 1998) (statement of Rep. Leach).

other hedge funds. The President's Working Group said that LTCM's counterparties tolerated the minimal level of disclosure because of the stature of the LTCM's principals, its impressive track record, and the opportunity for the counterparties to profit from a significant trading relationship with LTCM.[18] In any event, it appears that most of LTCM's counterparties simply did not comprehend the size and concentration of LTCM's off-balance-sheet exposures and did not exercise any significant scrutiny or monitoring of LTCM's risk profile.

The President's Working Group also suggested that LTCM's counterparties may have been lulled into a false sense of security about their LTCM exposure "based solely on their collateral arrangements with [LTCM]."[19] It concluded, however, that the collateral protection was inadequate because it did not take account of the potential future exposures from the various positions that LTCM had taken. In addition, LTCM was able to negotiate extremely favorable terms on its financing arrangements, including zero initial margin, two-way collateral, and rehypothecation rights.[20] The favorable terms on its collateral arrangements allowed LTCM to significantly increase its implicit leverage and its risk exposure.[21] Because it did not post initial margin, LTCM did not have equity specifically supporting its individual derivative positions. Moreover, because of the success of its convergence strategy in its early years, the two-way collateral arrangements on its derivative positions meant that LTCM's counterparties were positing collateral to it. LTCM could use this collateral to further expand its derivatives positions. It also meant that LTCM would ultimately be challenged by the size of its derivatives book when the markets turned against

[18] PWG Report, *supra* note 6, at 15.

[19] *Id.*

[20] U.S. General Accounting Office, GAO/GGD-00-3, Long-Term Capital Management: Regulators Need to Focus Greater Attention on Systemic Risk 6 (Oct. 1999) [hereinafter GAO Report]. The favorable terms that LTCM received on its repo and derivative transactions allowed LTCM to maximize its flexibility for meeting collateral requirements on these transactions. For a discussion of the sophisticated process that LTCM implemented to move excess collateral from the account of one counterparty to meet a collateral requirement for the account of another counterparty, see Dunbar, *supra* note 5, at 148–149 and 184–186.

[21] The ability of a perceived market-leading firm to obtain overly generous financial accommodations from sophisticated banks and securities firms was also exemplified by Enron, which was named "America's Most Innovative Company" by *Fortune* magazine for six consecutive years between 1996 and 2001. After being named "America's Most Innovative Company" for the sixth consecutive year in 2001, Enron filed for bankruptcy in December 2001. *See* Bethany McLean & Peter Elkind, Enron: The Smartest Guys in the Room (2004). The Enron case involved charges of accounting fraud as well as mismanagement. The LTCM case did not involve charges of fraud, just charges of hubris.

it in 1998 and it was required to begin posting collateral on its extensive derivative positions. LTCM's liquidity position quickly deteriorated. In the end, it was liquidity risk, aided and abetted by excessive leverage, that brought LTCM to the brink of failure. It appears that the risk models used by LTCM failed to assess adequately the liquidity risk that LTCM was assuming in its strategies. The President's Working Group concluded that the general fallout from the market shocks in 1998 demonstrated the need to go beyond value-at-risk ("VAR") and potential future exposure models built only on very recent price data that could underestimate both the size and potential shocks to risk factors and their correlation.[22] The President's Working Group euphemistically concluded that "some of the risk models used by LTCM *and* its creditors and counterparties were flawed."[23]

Another point missed by LTCM and its counterparties was that while LTCM was diversified across global markets, it was not very well diversified as to strategy.[24] LTCM's core strategy implemented across geographic and product markets assumed that liquidity, credit, and volatility spreads would narrow across markets. In fact, the events of August 1998 led spreads to widen in markets across the world at the same time. The President's Working Group noted that the LTCM case raised the issue of how events that are assumed to be extreme and very improbable should be incorporated into risk management and business practice since it appeared that both LTCM's risk models and those of many of its counterparties had underestimated the probability of severe losses from extreme events like those of August 1998.[25] These issues were all

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[22] PWG REPORT, *supra* note 6, at 15. The PWG REPORT further observed that:

> measurements of potential exposures became virtually meaningless during the third quarter of 1998, as volatility of the underlying securities increased beyond the historical levels incorporated into the risk models. *Id.* at B-11.

LTCM used a so-called Risk Aggregator system to produce a consolidated VAR number for its various positions. Apparently, some informal stress testing of the Risk Aggregator result was done by LTCM, but the outcome of the informal stress testing was never taken seriously by the principals of LTCM. *See* DUNBAR, *supra* note 5, at 186–188.

[23] *Id.* at 15 (emphasis original).

[24] PWG REPORT, *supra* note 6, at 16.

[25] *Id.* In addition to their exposure to LTCM, many of LTCM's largest counterparties were also pursuing convergence trading strategies of their own, but not of the absolute size or relative concentration pursued by LTCM. *See* LOWENSTEIN, *supra* note 5, at 174:

> the simple fact is that by mid-September, the Wall Street banks were not principally worried about Long-Term Capital—they were worried about themselves. Given that every bank had many of the same trades as Long-Term, exiting from their positions was a matter of self-preservation.

identified in hindsight by the President's Working Group. Few, if any observers, identified or adequately assessed these issues before the crisis in August 1998. In fact, the story of LTCM's early operations was one of remarkable success.

LTCM'S EARLY YEARS

LTCM began operations in February 1994 with capital of $1.3 billion.[26] It produced returns to investors (net of management fees) of 19.9 percent in 1994, 42.8 percent in 1995, 40.8 percent in 1996, and 17.1 percent in 1997.[27] Based on its strong earnings, LTCM's capital grew to more than $7 billion by 1997.[28] To address the declining return to investors in 1997, LTCM decided to return $2.7 billion in capital to its investors at the end of 1997.[29] By reducing its capital to $4.8 billion without reducing its asset size, LTCM consciously increased its leverage ratio from 18-to-1 to 28-to-1, the latter figure being described by one financial commentator as "astounding."[30] In 1998 LTCM would continue to astonish, but in other ways. In May and June of 1998, LTCM suffered losses in excess of $700 million, reducing its capital to $4.1 billion. In August of 1998, the Russian government devalued its currency and defaulted on its debt, convulsing the international markets and producing additional losses for LTCM in the amount of $1.8 billion.[31] Although designed by two Nobel laureates, LTCM's risk-management models failed to encompass the possibility of market reactions of the type caused by the Russian government default.[32] By the end of August, LTCM's capital had been reduced

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[26] *See* Franklin R. Edwards, *Hedge Funds and the Collapse of Long-Term Capital Management*, 13 J. ECON. PERSP. 189, 197 (1999).

[27] *Id.*

[28] Jorion, *supra* note 10, at 279; DUNBAR, *supra* note 5, at 181.

[29] PWG REPORT, *supra* note 6, at 11.

[30] Jorion, *supra* note 10, at 279. *See also* DUNBAR, *supra* note 5, at 188.

[31] PWG REPORT, *supra* note 6, at 12.

[32] The PWG REPORT described the effects of the Russian government actions on the markets and on LTCM as follows:

> The LTCM Fund's size and leverage, as well as the trading strategies that it utilized, made it vulnerable to the extraordinary financial market conditions that emerged following Russia's devaluation of the ruble and declaration of a debt moratorium on August 17 of [1998]. Russia's actions sparked a "flight to quality" in which investors avoided risk and sought out liquidity. As a result, risk spreads and liquidity premiums rose sharply in markets around the world. The size, persistence, and pervasiveness of the widening of risk spreads confounded the risk management models employed by LTCM and other participants. Both LTCM and other market participants suffered losses in individual markets that greatly exceeded what conventional risk models, estimated during more stable periods, suggested

to $2.3 billion (with a resulting leverage ratio of 50-to-1).[33] By the end of the third week of September, LTCM's capital had been further reduced to approximately $600 million, resulting in a truly astonishing leverage ratio in excess of 130-to-1.[34] In late August and early September, the senior management of LTCM began a frantic effort to raise additional equity from its existing investors and from new investors. These efforts met with no success in the fraught financial environment prevailing after the Russian government default.

With the markets in turmoil, LTCM's liquidity position became increasingly precarious in August and September. LTCM appears to have compounded its liquidity problems by its response to its losses in May and June. To reduce the size of its balance sheet, in July it sold some of its most liquid assets like Treasury bonds but decided to retain its more illiquid assets which promised to be more profitable when market conditions stabilized.[35] In August and September the mark-to-market valuation on collateral calls by counterparties on LTCM's derivatives became more contentious (a phenomenon replicated for AIG in its crisis in September 2008) and caused a liquidity crisis for LTCM (again akin to the AIG situation).[36] Bear Stearns, which served as the prime broker for LTCM, was requiring LTCM to collateralize potential settlement exposures, causing additional strains on LTCM's liquidity.[37] Not quite ten years later, Bear Stearns would find itself in the reverse position. As it encountered its own financial problems in 2008, Bear Stearns would face increasing collateral demands from

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were probable. Moreover, the simultaneous shocks to many markets confounded expectations of relatively low correlations between market prices and revealed that global trading portfolios like LTCM's were less well diversified than assumed. Finally, the "flight to quality" resulted in a substantial reduction in the liquidity of many markets, which, contrary to the assumptions implicit in their models, made it difficult to reduce exposures quickly without incurring further losses. *Id.* at 12.

[33] *Hedge Fund Operations: Hearing Before H. Comm. on Banking & Financial Services*, 105th Cong. 254 (1998) [hereinafter *Hearing on LTCM*] (statement of Richard R. Lindsey, Director, Div. of Mkt. Regulation SEC).

[34] LOWENSTEIN, *supra* note 5, at 191–192 (describing LTCM's leverage in excess of 100-to-1 early in the third week of September as "a fantastic figure in the annals of investment").

[35] *See* DUNBAR, *supra* note 5, at 196–197.

[36] PWG REPORT, *supra* note 6, at 13. For a discussion of the AIG situation in 2008, see FINANCIAL CRISIS INQUIRY REPORT, *supra* note 4, at 243–244, 265–273 & 345–346. LTCM's insistence on not providing initial margin or "haircuts" on its repo financings and its derivatives ultimately may have come back to haunt it. Some observers have suggested that LTCM's counterparties used the opportunity in August and September 1998 to mark-to-market collateral on these positions at as high a rate as possible to compensate for the lack of initial margin or "haircut." *See* DUNBAR, *supra* note 5, at 212–213.

[37] PWG REPORT, *supra* note 6, at 13.

JPMorgan, which served as one of its principal clearing banks.[38] Bear Stearns apparently had forgotten the lessons of September 1998. JPMorgan had not.

THE RESCUE OF LTCM

The President of the Federal Reserve Bank of New York, William McDonough, was alerted to the problems of LTCM in early September when LTCM advised him of its losses and its plans to raise new capital. By September 18 as LTCM's difficulties became more widely known in the market and as liquidity pressures on LTCM mounted, several major counterparties of LTCM raised their concerns about LTCM with President McDonough. Senior officials from the Federal Reserve Bank of New York and the U.S. Treasury Department were dispatched to meet with the management of LTCM on an emergency basis on Sunday, September 20, to gather information on LTCM's situation.[39] On September 22, the Federal Reserve Bank of New York invited 13 of the major counterparties of LTCM to its office to facilitate a discussion of LTCM's problems.[40] The objective was to find a solution to LTCM's problems that would avoid a disorderly close-out of its very large derivative positions by its counterparties. After intensive discussions involving the senior leaders of the firms, on September 23 a consortium of 14 firms agreed to recapitalize the LTCM fund. The consortium agreed to invest $3.65 billion in new equity in the fund in return for a 90% equity stake along with operational control

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[38] For a discussion of the Bear Stearns situation in 2008, see Financial Crisis Inquiry Report, *supra* note 4, at 238–242 & 283–285.

[39] *Hearing on LTCM*, *supra* note 33, at 144 (statement of William J. McDonough, President, Fed. Res. Bank of N.Y.).

[40] In one of the small ironies surrounding the LTCM rescue, President McDonough was unable to attend the meeting held at the Federal Reserve Bank on September 22 because he was in London delivering a speech in his capacity as Chairman of the Basel Committee on Banking Supervision on credit risk modeling. One of the points he made in his speech would turn out to be directly relevant to the LTCM episode:

> While most risk models used by banks are designed to capture normal day-to-day risks, in all their forms, a real concern of supervisors is the low-probability, high severity event that can produce losses large enough to threaten a financial institution's health.

William J. McDonough, President, Fed. Res. Bank of N.Y., Address at the Conference on Credit Risk Modeling and Regulatory Implications (Sept. 22, 1998).

The risk model used by LTCM and the models used by many of its counterparties suffered from this deficiency as was affirmed by the market events occurring in August and September 1998. The principals of LTCM described the market events of August and September 1998 as a "perfect storm such as strikes once in a hundred years" that was outside the bounds of their risk model. Lowenstein, *supra* note 5, at 228–229.

through their ownership of a new general partner to the LTCM fund.[41] The existing equity owners were diluted to a 10% position in the fund. The hurried and harried arrangement was publicly announced on the evening of September 23 amid mounting market concern for the possible fallout of an LTCM failure.[42] On September 28 the consortium funded its investment in LTCM just in time to prevent LTCM from defaulting on additional collateral calls on its derivative positions.[43] The public debate over the LTCM "bailout," however, had only just begun.[44]

INITIAL REGULATORY OBSERVATIONS

The early regulatory observations on the rescue of LTCM provided some insights into LTCM's problems. Scarcely a week after the rescue of LTCM was announced on September 23, 1998, Chairman of the Federal Reserve Board Alan Greenspan, President of the Federal Reserve Bank of New York William McDonough, and Chairperson of the CFTC Brooksley Born, were called upon to testify before the House Committee on Banking and Financial Services on the rescue of LTCM.[45] The Chairman of the Committee, Representative James Leach, began the hearing with the observation that although no public money was involved in the rescue of LTCM, the rescue was the first time that the "too-big-to-fail" doctrine had been applied beyond insured depository institutions, raising questions about the role of the Federal Reserve in the private

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[41] PWG Report, *supra* note 6, at 13.

[42] It should be noted that September 23 was otherwise a propitious day for the financial services industry. The Federal Reserve Board announced its approval of the application by Travelers Group to acquire Citicorp, initiating a restructuring of the financial services sector that would subsequently be confirmed by the Gramm-Leach-Bliley Act in 1999. *See* Press Release, Federal Reserve (Sept. 23, 1998) https://www.federalreserve.gov/boarddocs/press/bhc/1998/19980923.

[43] A chronicler of the LTCM collapse reports that 140 lawyers representing the 14 member firms of the consortium spent the frantic days between September 24 and September 28 hammering out the final details of the arrangement between the consortium and the LTCM management. *See* Lowenstein, *supra* note 5, at 210–214. The rescue effort was ultimately successful. After an orderly wind-down process overseen by the consortium, the $3.65 billion investment made by the consortium members was fully repaid by January 2000 and the LTCM fund was closed. Dunbar, *supra* note 5, at 240.

[44] *See, e.g.*, Gretchen Morgenson, *The MARKETS: Seeing a Fund as Too Big to Fail, New York Fed Assists Its Bailout*, N.Y. Times, Sept. 24, 1998; Michael Schroeder & Jacob M. Schlesinger, *Fed May Face Recriminations over Handling of Fund Bailout*, Wall St. J., Sept. 25, 1998; Robert C. Altman, *Dangerous Bailout*, Wash. Post, Oct. 1, 1998.

[45] *Hearing on LTCM*, *supra* note 33.

sector "bailout" of LTCM and the moral hazard engendered by the rescue.[46] He also concurred in the judgment expressed by Chairperson Born that LTCM's troubles should serve as a wake-up call to the risk that OTC derivatives could pose to the financial system.[47]

President McDonough testified as the lead-off witness, explaining the role played by the Federal Reserve Bank of New York in facilitating the private sector rescue of LTCM. He focused explicitly on the question of "our judgment that the abrupt and disorderly close-out of Long-Term Capital's positions would pose unacceptable risks to the American economy."[48] He expressed the concern that a default of LTCM would have caused its many counterparties to rush to close-out hundreds of billions of dollars of derivative transactions simultaneously.[49] He expressed the further concern that in the event of a mass close-out of positions, the counterparties would not have been able to liquidate their collateral or establish off-setting positions at previously existing prices.[50] The markets would then have moved sharply and the losses to the counterparties would have been increased. The projected fire sale of collateral would have resulted in significant losses to some of the counterparties of LTCM. LTCM had estimated that in the event of its failure, its 17 largest counterparties would have suffered losses in the aggregate amount of $3 to $5 billion.[51]

President McDonough observed that while these losses to direct counterparties would have been considerable, that was not in itself sufficient reason for the Federal Reserve Bank to become involved. Instead, he cited two reasons for the Federal Reserve Bank involvement.[52] First, the "disorderly" close-out of the derivatives by the counterparties would affect not just the counterparties to LTCM, but other market participants holding assets similar to those serving as collateral for the LTCM derivatives. Second, the losses experienced on the fire sale of the collateral would likely lead to extreme price moves in other credit and interest rate markets. He noted that if the markets had not just experienced a large shock in August (arising from the Russian government default) with investors already fleeing from private debt into Treasury securities, his judgment about the risks to the U.S. financial system from the failure of LTCM might

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[46] *Id.* at 2 (statement of Rep. James A. Leach).

[47] *Id.* at 3.

[48] *Id.* at 16 (statement of William J. McDonough, President, Fed. Res. Bank of N.Y.).

[49] *Id.* at 19.

[50] *Id.*

[51] *Id.* at 52. *See also* PWG Report, *supra* note 6, at 17.

[52] *Hearing on LTCM*, *supra* note 33, at 19 (statement of William J. McDonough).

have been different. In the stressed environment at the time, however, he believed that a massive close-out of LTCM's outsized derivatives portfolio posed significant risks to the already fragile markets.[53]

He also took pains to explain the limited role played by the Federal Reserve Bank of New York in facilitating the private-sector rescue of LTCM.[54] The Federal Reserve Bank initiated meetings among the largest creditors and counterparties of LTCM on September 22 to discuss various private-sector approaches to stabilizing LTCM. He emphasized that at no time during the convulsive week was there a discussion of the use of public moneys.[55] He further emphasized that "[n]o Federal Reserve or Government guarantees, actual or implied, were offered, discussed or solicited" and that "no Federal Reserve official pressured anyone."[56] Although the rescue was characterized in various press reports as a "bailout",[57] President McDonough said that it was a private sector solution to a private sector problem, with new equity provided by LTCM's largest creditors and counterparties, producing a substantial dilution of the original equity holders.[58] Indeed, if President McDonough were to have had occasion to describe the LTCM resolution in post-2008 financial crisis

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[53] *Id.* The PWG REPORT offers an additional perspective on why the large counterparties of LTCM would have been anxious to avoid the failure of LTCM. It indicates that there was a concern among the counterparties that if LTCM were to declare bankruptcy in its chartering jurisdiction, the Cayman Islands, there would be some legal uncertainty about whether the counterparties' rights under the U.S. Bankruptcy Code to immediately liquidate their collateral could be delayed. Such a delay could expose the counterparties to an extended period of market risk on the value of their collateral. PWG REPORT, *supra* note 6, at 21. The PWG REPORT concluded that the U.S. Bankruptcy Code provision that allows close-out netting and immediate liquidation of collateral on derivatives and certain other financial contracts (as an exception to the automatic stay that otherwise applies in a bankruptcy case) generally contributes to the stability of the markets. *Id.* at 19. The question of the desirability of a broad exception to the Bankruptcy Code automatic stay provision for derivatives and other financial contracts would be revisited in the aftermath of the 2008 financial crisis. *See* Paul L. Lee, *The Dodd-Frank Act Orderly Liquidation Authority: A Preliminary Analysis and Critique—Part I*, 128 BANKING L. J. 771, 793–797 (2011).

[54] *Hearing on LTCM*, *supra* note 33, at 19–21 (statement of William J. McDonough).

[55] *Id.* at 20.

[56] *Id.* at 20 & 26. The observation that no Federal Reserve official pressured anyone may be contrasted with the situation in September 2008 when Secretary of the Treasury Henry Paulson pressured—in his own words "leaned on"—individual financial institutions to rescue some of their failing brethren. HENRY M. PAULSON, JR, ON THE BRINK: INSIDE THE RACE TO STOP THE COLLAPSE OF THE GLOBAL FINANCIAL SYSTEM (2010).

[57] *See, e.g.*, Morgenson, *supra* note 44; Schroeder & Schlesinger, *supra* note 44; Altman, *supra* note 44.

[58] *Hearing on LTCM*, *supra* note 33, at 21 (statement of William J. McDonough).

terminology, he might have said that the LTCM resolution represented not a "bail-out" by the government, but rather a "bail-in" by its creditors.

He also addressed the criticism that the consortium rescue of LTCM left the management team of LTCM in place with a residual (if greatly diluted) equity stake. He said that the consortium members unanimously determined that leaving the LTCM managers in place with a residual equity stake was in the consortium's interest because it provided the LTCM management team who had the best knowledge of LTCM's complicated derivative trades with an incentive to maximize the residual value of the derivative trades as they were being unwound.[59] A similar situation would be encountered in the government rescue of AIG in 2008. The new government-appointed management team for AIG concluded that it was important to retain the senior traders at the AIG Financial Products Unit because of their knowledge of the extensive derivative positions that exposed the Financial Products Unit to ongoing losses.[60] President McDonough also had to respond to a criticism that the Federal Reserve Bank had been "gamed" by the LTCM management in promoting the consortium proposal over another investor group proposal that would have left the LTCM management with no role in the recapitalized firm.[61] McDonough asserted that he had scrupulously avoided promoting one deal over the other and that the other investor group proposal was in any event quickly retracted by the investor group itself.[62]

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[59] *Id.* at 67.

[60] *See Oversight of the Federal Government's Intervention at American International Group: Hearing Before the H. Comm. on Financial Services*, 111th Cong. 15 (2009) (statement of William C. Dudley, President, Fed. Res. Bank of N.Y.). The retention of senior traders in the case of the AIG Financial Products Group, however, was made more controversial by the payment of significant retention bonuses. *Id.*

[61] *Hearing on LTCM, supra* note 33, at 31 (statement of William J. McDonough). The second investor group consisted of Berkshire Hathaway, AIG, and Goldman Sachs. Goldman Sachs was also one of the firms leading the consortium effort, producing tensions of its own in the consortium group. See LOWENSTEIN, *supra* note 5, at 203–204 for a discussion of the tensions within the consortium group. The second investor group proposal provided for the group to acquire all of the LTCM fund for $250 million, in addition to making a new equity investment of $3.75 billion in the fund.

[62] *Hearing on LTCM, supra* note 33, at 29–31 (statement of William J. McDonough). McDonough explained that he was told by John Meriwether that there was a legal question about LTCM's legal authority to accept the other investor group proposal as it was structured and that he understood that it was the reason that LTCM did not accept the offer. There was nonetheless pointed criticism of the Federal Reserve Bank's handling of the second investor group proposal. *See, e.g.*, Kevin Dowd, *Too Big to Fail? Long-Term Capital Management and the Federal Reserve*, CATO INSTITUTE BRIEFING PAPER No. 52 (Sept. 23, 1999) (suggesting that the LTCM management

In his testimony President McDonough said that it was too early to state categorically what lessons were to be learned from LTCM. But he said that he was focused on three issues, all in his words "relating to leverage". The first issue was whether LTCM's creditors and counterparts had done an adequate credit analysis of LTCM and its transactions. The second issue related to the use of derivatives to increase leverage, in particular whether sufficient information was available to LTCM's counterparties on the future potential exposure that they might face in their derivative positions with LTCM. The third issue concerned the adequacy of counterparty models for stress testing their credit exposures to LTCM and the structuring of margin agreements.[63] He did not expand on these preliminary issues, instead noting that the federal banking agencies would be working with the President's Working Group to produce a report on the LTCM episode and its implications for the hedge fund market.

Chairman Leach of the Banking Committee lamented the fact that the government witnesses at the hearing could not provide an "autopsy" of the LTCM demise. With the rescue of LTCM having been completed scarcely two days before the hearing, it would have been unreasonable to expect President McDonough or the other government witnesses to provide a detailed analysis of the LTCM situation or a detailed set of recommendations for regulatory action in response to the LTCM episode. In fact, President McDonough spent most of his time at the hearing responding to questions about the role of the Federal Reserve Bank in facilitating the private-sector rescue of LTCM, not offering insights to the problems at LTCM and causes of its near collapse. If there was one thing about which President McDonough was certain, however,

rejected the second investor group proposal "because they were confident of getting a better deal from the Federal Reserve's consortium"). Other reports indicate that there was indeed a significant problem with the legal structure of the second investor group proposal that quickly led to its withdrawal by the investor group. *See, e.g.*, Lowenstein, *supra* note 5, at 203 (indicating that the proposal "was mistakenly worded as an offer to buy the assets of LTCM—the management company—which Buffet did *not* want" rather than the assets of the fund portfolio company which Buffett wanted); Dunbar, *supra* note 5, at 223 (suggesting that Meriwether used a legal excuse not to accept the second investor group proposal that was less advantageous to the LTCM management than the consortium proposal).

[63] In his testimony, President McDonough identified one of the basic problems in LTCM's own risk model:

> The unusual widening of credit spreads [after the Russian government default] also caused significant losses at Long-Term Capital. As markets around the world moved in the same direction at the same time, the diversification on which Long-Term had previously relied failed them utterly.

Hearing on LTCM, *supra* note 33, at 17.

it was that "in the absence of any involvement by the Federal Reserve Bank of New York, [LTCM] would have collapsed."[64]

Chairman Greenspan struck similar themes in his testimony before the Banking Committee. He observed that

> [h]ad the failure of LTCM triggered the seizing of markets, substantial damage could have been inflicted on many market participants, including some not directly involved with [LTCM], and could have potentially impaired the economies of many nations, including ours.[65]

He explained that the Federal Reserve Bank of New York used its "good offices" (both literally and figuratively) to help resolve the affairs of LTCM more quickly than would have been the case in normal times because "the threshold of action was lowered by the knowledge that markets had recently become fragile."[66] He said that in the fraught market environment prevailing at the time, "it was the Federal Reserve Bank of New York's judgment that it was to the advantage of all parties—including the creditors and other market participants—to engender if at all possible an orderly resolution rather than let the firm go into disorderly fire-sale liquidation following a set of cascading cross defaults."[67] The concern for pursuing an "orderly resolution" process rather than a "disorderly fire-sale liquidation" for a large financial institution in difficulty anticipated the concerns that would arise ten years later with respect to the failure of Lehman Brothers and the near failure of AIG and the legislative response that produced the Dodd-Frank Act in 2010.[68] In keeping with his free market creed, however,

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[64] *Id.* at 44. The telescoped time frame in which the rescue of LTCM was arranged was a precursor of the telescoped time frame in which the rescue operations for Bear Stearns in March 2008 and AIG in September 2008 would have to be accomplished. A consortium approach akin to that used in LTCM was also considered for Lehman Brothers, but it could not be achieved. *See* Financial Crisis Inquiry Report, *supra* note 4, at 332–334 (noting that a consortium "game plan" for the rescue of Lehman Brothers modeled on the LTCM experience had been prepared in outline form by the staff of the Federal Reserve Bank of New York and proposed to the heads of the major banks and securities firms at a meeting at the Federal Reserve Bank of New York on September 12, 2008 by Secretary of the Treasury Henry Paulson).

[65] *Hearing on LTCM*, *supra* note 33, at 23 (statement of Alan Greenspan, Chairman, Bd. of Gov. Fed. Res. Sys.).

[66] *Id.*

[67] *Id.* at 24.

[68] The Orderly Liquidation Authority in Title II of the Dodd-Frank Act was designed to address the concern with the "disorderly resolution" and "fire-sale liquidation" of collateral underlying derivative contracts as witnessed in the bankruptcy process for Lehman Brothers and as threatened by the prospect of a bankruptcy process for AIG. *See* Press Release, U.S. Dep't of the Treasury, Treasury Proposes Legislation for Resolution Authority (Mar. 25, 2009). *See also*

Chairman Greenspan appeared almost philosophical about the LTCM episode: "What is remarkable is not this episode, but the relative absence of such examples over the past years. Dynamic markets periodically engender large defaults."[69]

He also offered his own defense of the role played by the Federal Reserve Bank of New York in promoting the private-sector rescue of LTCM. He observed that the private-sector rescue was not a government bailout and that Federal Reserve funds were neither used, nor even suggested to be used to support LTCM.[70] He also noted that the rescue arrangements were not forced on unwilling market participants.[71] The market participants determined that LTCM and accordingly their claims would be worth more over time if the liquidation of LTCM's portfolio could be managed on an orderly basis as opposed to being subject to a fire sale. It was thus a matter of mutual self-interest for the members of the consortium to agree to the rescue proposal.[72] He did acknowledge that any time there is public involvement that softens the blow of private-sector losses "even as obliquely as in this episode," the issue of moral hazard arises.[73] In effect, he concluded that avoiding a fire sale on the scale threatened by a disorderly liquidation of LTCM's positions was worth the price of the incremental moral hazard.[74]

Like Mr. McDonough, Chairman Greenspan offered some preliminary questions that would need to be addressed in a post mortem on LTCM. The first question was "how much dependence should be placed on financial modeling, which, for all its sophistication, can get too far ahead of human judgment."[75] He did not, however, advert to the fact that at that time the Basel Committee on Banking Supervision was already working on the development of a Basel II approach, which would expand the role of internal models for the capital calculations of the largest banks—many of which also happened to be counterparties of LTCM. Yet it was clear that the financial modeling done by LTCM and many of its large counterparties had failed to encompass the market risks that arose in August 1998.

U.S. Dep't of the Treasury, Financial Regulatory Reform, A New Foundation: Rebuilding Financial Supervision and Regulation 76 (June 2009).

[69] *Hearing on LTCM*, *supra* note 33, at 23 (statement of Alan Greenspan).

[70] *Id.* at 24.

[71] *Id.*

[72] *Id.* at 28.

[73] *Id.* at 23.

[74] *Id.* at 25 & 52.

[75] *Id.* at 25.

The second question was what steps counterparties could have taken to ensure that they were properly estimating their exposure to LTCM. He stated that the counterparties had failed to stress test their exposures to LTCM and thus had underestimated the size of the uncollateralized exposure that they could face in volatile and illiquid markets. This in turn involved an under appreciation of the volume and nature of the risks that LTCM had undertaken and its relative size in the overall market.[76]

The third question was what lessons the bank regulators should draw from the LTCM episode for their supervision of the bank creditors and counterparties of LTCM. One lesson that could be drawn was that the banks generally had adequate collateral to cover most of their current market-to-market exposures with LTCM, but not their potential future exposures. He concluded that the supervisors of banks and securities firms had to assess whether current procedures for stress testing and counterparty assessment could have been improved to insulate the counterparties better from LTCM's "debacle."

The fourth issue was whether the failure of LTCM called for the direct regulation of hedge funds. In keeping with his free-market philosophy, he questioned whether hedge funds could be directly regulated in the United States because of their ability to transact their business from other jurisdictions. He suggested that the best that could be done is to regulate them indirectly through the regulation of the sources of their funds, namely, the banks and securities firms that provide financing to hedge funds. He asserted that the first line of risk defense should be the lenders and counterparties who are dealing directly with a hedge fund—although he did acknowledge that lender and counterparty discipline in the case of LTCM had been notably deficient.[77] He said that the bank supervisors should be the second line of risk defense through their examination of the lending procedures for hedge fund credit at regulated banking entities.[78] As noted above, he said that the supervisors of banks and security firms had to assess what changes to stress testing and counterparty assessment could be made to improve these processes. He indicated that this work was already underway. During the fourth quarter of 1997 and the first quarter of 1998, staff from the Federal Reserve had met with the managers at several major New York banks to discuss their relationships with hedge funds, updating a similar study conducted three years earlier. This review apparently failed to identify the kind of risks being run at a firm like LTCM. Indeed, just two weeks before his testimony, in response to a question from a member of the

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[76] *Id.*

[77] *Id.* at 26.

[78] *Id.*

House Banking Committee at another hearing who expressed concern about the ability to identify the risk exposures of hedge funds, Chairman Greenspan had offered a robust view of the ability of lending institutions to assess hedge fund exposure:

> Let me say, Congressman, that hedge funds are very strongly regulated by those who lend the money in the sense that the major vehicle for supervision of lending is really from those who make the loans. When I was involved in the private sector and heavily involved in the banking industry, the amount of oversight of hedge funds was very large. In other words, there was a considerable amount of effort to understand what was a safe loan and what was not a safe loan. They are not technically regulated in the sense that banks are. But they are under a fairly significant degree of surveillance.[79]

It was fortuitous that Chairman Greenspan mounted this heroic defense of the discipline imposed on hedge funds by their lenders two weeks before the implosion of LTCM. Chairman Greenspan's abiding faith in market discipline would be shaken at last in September 2008 when he would testify that he was in a state of "shocked disbelief" over the breakdown of market discipline leading up to the 2008 financial crisis.[80] He indicated that the events of the 2008 financial crisis had undermined forty years of his own personal reliance on the pillar of market discipline.[81]

The final issue that he raised was how much weight concerns about moral hazard should be given when designating mechanisms for governmental regulation of the markets, particularly with respect to capital and leverage. He said that the regulatory system could reduce the risks of episodes like LTCM by very significantly reducing the degree of leverage in the system. But he counseled against such a course. He cited the trade-off that the U.S. system has generally made in favor of allowing higher leverage in the financial system to promote a higher rate of growth in the economy.[82] He said that "[w]e do not

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[79] *International Economic Turmoil: Hearing Before the H. Comm. on Banking and Financial Services*, 105th Cong. 148 (1998) (statement of Alan Greenspan, Chairman, Bd. of Gov. Fed. Res. Sys.).

[80] *The Financial Crisis and the Role of Federal Regulators: Hearing Before the H. Comm. on Oversight and Government Reform*, 110th Cong. 10 (2008) (statement of Alan Greenspan, former Chairman, Bd. of Gov. Fed. Res. Sys.).

[81] *Id.* at 18–19.

[82] *Hearing on LTCM, supra* note 33, at 46 (statement of Alan Greenspan). He expanded on this point as follows:

> We have decided to create a system which, because of deposit insurance, because of the

have the choice of accepting the benefits of the current system without accepting its risks."[83] He said that Congress could instruct the Federal Reserve through legislation to significantly alter the degree of leverage that had been induced in the system, but that he was not sure that it was a good idea.[84]

In his prepared statement on LTCM, Chairman Greenspan avoided joining issue on the question of the risks presented by the OTC derivatives market and the need for federal regulation of OTC derivatives. In response to a question from a Committee member, however, he said that "the degree of supervision of regulation of the over-the-counter derivatives system is quite adequate to maintain a degree of stability in the system."[85] He added that "it [was] by no means clear to [him] that the expansion of regulation to that particular area serves the overall financial system of the United States."[86] He had in fact only a few weeks before testified before the House Banking Committee against the idea of extending federal regulation to the OTC derivatives market.[87] Even in light of the LTCM episode, he continued to place his unalloyed faith in market discipline to manage the OTC derivatives market.

Another witness at the LTCM hearing, Chairperson Brooksley Born of the CFTC, offered an entirely different perspective. She cited the unregulated nature of the OTC derivatives market as a source of significant risk to the U.S. financial markets. She said that the LTCM episode should serve as a "wakeup call" to the unknown risks that OTC derivatives may pose to financial stability and to the need to deal with the regulatory gaps relating to hedge funds and other OTC derivative market participants.[88] She explained that LTCM was

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Federal Reserve's discount window and Fed wire, which creates riskless settlement, we have induced a fairly significant degree of leverage in the system.

Now that leverage arguably has actually enhanced the rate of growth in this country and raised the standard of living. It has also increased the risk of problems, and I think the major choice that confronts the American people as a whole and the type of tradeoff which the Congress has to address is, where on that spectrum of leverage do we want to position ourselves? *Id.*

[83] *Id.* at 27.

[84] *Id.* at 46.

[85] *Id.* at 71.

[86] *Id.*

[87] *H.R. 4062—The Financial Derivatives Supervisory Improvement Act of 1998* and *H.R. 4239—The Financial Contract Netting Improvement Act: Hearing Before the H. Comm. on Banking and Financial Services,* 105th Cong. 82 (1998) (statement of Alan Greenspan, Chairman, Bd. of Gov. Fed. Res. Sys.).

[88] *Hearing on LTCM, supra* note 33, at 75 (statement of Brooksley Born, Chairperson, CFTC).

subject to only a limited scope of regulation and oversight by the CFTC with respect to its trades on U.S. futures and options exchanges. The CFTC had no information on LTCM's positions in the OTC derivatives market. Chairperson Born identified four principal issues that were highlighted by the LTCM episode.[89] The first was the lack of transparency in the OTC derivatives market generally. The second issue was the excessive leverage that LTCM was able to achieve at least in part because its individual counterparties had no visibility into the aggregate exposure LTCM was assuming in the OTC market. She also cited LTCM's practice of not providing its counterparties with initial margin.[90] The third issue was the lack of internal controls applied by hedge funds and their counterparties, including questions about the VAR models being used by OTC derivative dealers. In subsequent testimony in March 1999, Chairperson Born would assert that "LTCM now stands as a cautionary tale of the fallibility of some of the most sophisticated VAR models."[91] The final issue was the need for a coordinated international approach for the supervision of the OTC derivatives market.

At the time of her testimony, Chairperson Born was engaged in a contentious debate with the Treasury, the Federal Reserve Board, and the Securities and Exchange Commission ("SEC") over the authority and desirability of the CFTC asserting regulatory oversight over the OTC derivatives markets. In May 1998, the CFTC had issued a Concept Release on OTC derivatives, sparking a battle among the federal agencies over the need for federal regulation of the OTC market.[92] In a highly unusual move, on the day the CFTC released its Concept Release, the Secretary of the Treasury, the Chairman of the Federal Reserve Board, and the Chairman of the SEC released a joint statement opposing the CFTC's action.[93] In the bureaucratic equivalent of a pincer movement, these authorities encircled the CFTC and convinced the Congress in October 1998 to impose a moratorium on any action by the CFTC to

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89 *Id.* at 77.

90 *Id.*

91 *The Operations of Hedge Funds and Their Role in the Financial System: Hearing Before the Subcomm. on Capital Markets, Securities & Government Sponsored Enterprises of the H. Comm. on Banking & Financial Services*, 106th Cong. 63 (1999) (statement of Brooksley Born, Chairperson, CFTC).

92 Commodity Futures Trading Commission, Concept Release, Over-the-Counter Derivatives, 63 Fed. Reg. 26114 (May 12, 1998).

93 Joint Statement by Treasury Secretary Robert E. Rubin, Federal Reserve Board Chairman Alan Greenspan and Securities and Exchange Commission Chairman Arthur Levett (May 7, 1998), https://www.treasury.gove/press-center/press-releases/Pages/rr2426.aspx.

regulate the OTC market.[94] The battle over the issue would continue for the next two years, waged at least in part against the receding memory of the LTCM episode. The battle would ultimately be resolved in December 2000 with the enactment of the Commodity Futures Modernization Act of 2000 (the "CFMA"), which effectively prohibited federal regulation of the OTC derivatives market.[95] The wisdom of the enactment of the CFMA would become the subject of intense criticism in the aftermath of the 2008–2009 financial crisis. For many observers, the OTC derivatives market was a significant contributor to the financial damage in the crisis.[96] Among its many provisions the Dodd-Frank Act imposed extensive federal regulatory oversight over the OTC derivatives market, reversing the regulatory and political judgment reflected in the CFMA.[97]

CONCLUSION

The regulators' reactions in the immediate wake of the LTCM episode revealed a number of core issues, each foreshadowing a comparable issue that would arise in the financial crisis in 2008. One overriding observation can be made about these core issues. None of the core issues relate specifically to LTCM as a hedge fund, but instead to the specific business model adopted by LTCM and the manner of operation by LTCM under that business model.[98]

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[94] For one view of the administrative strife surrounding the CFTC Concept Release, see Financial Crisis Inquiry Report, *supra* note 4, at 47–48. The Treasury, Federal Reserve Board, and SEC were concerned that the approach taken in the Concept Release implicitly raised questions about the legality of a significant part of the existing OTC derivatives market, involving billions of dollars of outstanding contracts. *See, e.g., OTC Derivatives: Hearing Before the S. Comm. on Agriculture, Nutrition, & Forestry,* 105th Cong. 26–27 (1998) (statement of Roger L. Anderson, Dep. Assist. Secr. for Federal Finance, U.S. Dept. of the Treas.).

[95] Pub. L. No. 106-554-Appendix E-H.R.5660, 114 Stat. 2763A-365–2763A-461 (2000).

[96] *See, e.g.,* Kenneth R. French et al., The Squam Lake Report: Fixing the financial System 123–133 & 145–149 (2010); Viral v. Acharya & Matthew Richardson, Restoring Financial Stability: How to Repair a Failed System 233–248 (2009).

[97] Pub. L. No. 111-203, Title VII, 124 Stat. 1641-1802 (2010).

[98] A representative of the hedge fund industry made this point in a slightly different way and presumably for a different purpose. He made the point as follows:

> In size, leverage, degree of position concentration, and access to credit, LTCM had few or no parallels in the universe of hedge funds. LTCM should be viewed as an instance of "pilot error," not as evidence of a structural defect in the hedge fund industry.

Bank Lending To and Other Transactions With Hedge Funds: Hearing Before the Subcomm. on Financial Institutions & Consumer Credit of the H. Comm. on Banking & Financial Services, 106th Cong. 68 (1999) (submission of John G. Gaine, Pres., Managed Funds Association).

The issues themselves relate to risks that can arise both in the banking sector and in the nonbank financial sector and the lessons from the LTCM episode extend to both the banking sector and the nonbank financial sector.

The first issue, or perhaps more accurately lesson, from the LTCM episode was the realization that the financial difficulties of a large nonbank financial company could present systemic risk. Previously, the concept of systemic risk and its corollary concept of too-big-to-fail had been analyzed exclusively in terms of banking institutions. As Chairman Leach noted at the outset of the hearing on LTCM, the rescue of LTCM was the first time that the too-big-to-fail doctrine had been applied beyond insured depository institutions.[99] The systemic risk presented by the nonbank financial sector as exemplified by Bear Stearns and Lehman Brothers would be at the center of the financial crisis in 2008.

The second issue was the risk presented by excessive leverage. Virtually every analysis of LTCM concludes that excessive leverage through its balance sheet and off-balance-sheet exposures was a crucial factor in causing the near failure of LTCM. The issue of excessive leverage was not limited to LTCM or other hedge funds as subsequent reports on the LTCM affair would acknowledge. Other financial institutions in 1998 were as leveraged as, and in some cases more highly leveraged than, LTCM. The President's Working Group report noted that at year-end 1998 the five largest investment banks had an average leverage ratio of 27-to-1.[100] Many of the investment banks would become even more highly leveraged in the decade following the LTCM episode. Excessive leverage in the financial system was seen as a major contributor to the 2008 financial crisis.[101]

In the aftermath of the 2008 financial crisis, the hedge fund industry would again become the subject of scrutiny although there appeared to be little evidence that hedge funds contributed to the severity of the financial crisis. In fact, some observers have suggested that hedge funds actually reduced systemic risk during the crisis by providing liquidity and by taking troubled assets off the balance sheets of the banking system. *See, e.g.*, Viral V. Acharya et al, Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance 352 (2011).

[99] *See Hearing on LTCM*, *supra* note 33, at 2. Prior to the LTCM episode, discussion of systemic risk and too-big-to-fail issues focused on the banking sector. *See, e.g.*, Richard J. Herring & Robert E. Litan, Financial Regulation in the Global Economy 95-107 (1995) (discussing systemic risk exclusively in the context of banking institutions).

[100] PWG Report, *supra* note 6, at 29. As noted earlier, the PWG Report stated that LTCM's balance sheet leverage of 25-to-1 at the beginning of 1998 "implie[d] a great deal of risk." *Id.* at 12. The GAO Report stated that in 1998 two of the largest investment banks had balance sheet leverage ratios in the range of 30-to-1 to 34-to-1. GAO Report, *supra* 20, at 7.

[101] *See, e.g.*, Financial Crisis Inquiry Report, *supra* note 4, at xviii–xx.

The third issue was a heightened appreciation for the liquidity risks presented by nonbank financial entities. LTCM relied to a very significant extent on repos to leverage its balance sheet. The general fragility of short-term repo financing for nonbank entities like Bear Stearns and Lehman Brothers would come to be recognized in 2008.[102] The LTCM story actually provides an interesting contrapuntal note on the use of repos. To mitigate the funding risk from its heavy reliance on repo financing, LTCM chose to use term repos to fund most of its balance sheet.[103] In contrast, it was an excessive reliance on short-term repos such as overnight or open repos that was a principal source of the liquidity problems at Bear Stearns and Lehman Brothers.[104] This short-term funding strategy resulted in a so-called "run on the repo" during the 2008 financial crisis. The regulatory response to the 2008 financial crisis has been to incentivize regulated financial institutions to switch from overnight or open repos to longer term repos.[105] The use of term repos was a rare positive lesson from the LTCM episode, although even the use of term repos could not in the end protect LTCM from the deluge of collateral calls on its huge derivatives book.

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[102] *See, e.g.*, Gary B. Gorton, Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007 (May 19, 2009), https://ssrn.com/abstract=1401882.

[103] *See supra* note 10.

[104] *See* VIRAL V. ACHARYA ET AL, REGULATING WALL STREET: THE DODD-FRANK ACT AND THE NEW ARCHITECTURE OF GLOBAL FINANCE 319–320 (2011). *See also* Gorton, *supra* note 102.

[105] In the aftermath of the financial crisis, the federal banking agencies have implemented a comprehensive regulatory and supervisory approach to managing liquidity risk at regulated financial institutions. In 2014, the federal banking agencies adopted a liquidity coverage ratio ("LCR") requirement based on the Basel Committee on Banking Supervision's liquidity coverage ratio framework. The LCR incentivizes term repo funding by requiring banking organizations to hold high quality liquid assets in a specified amount against secured financing transactions (including repos) that mature within 30 calendar days, but generally does not require such a buffer for repos with a maturity of more than 30 days. *See, e.g.*, 12 C.F.R. § 249.32(j). Similarly, in 2016, the federal banking agencies proposed a net stable funding ratio ("NSFR") requirement, again based on the Basel Committee on Banking Supervision's net stable funding ratio framework. The NSFR requires banking organizations to support the assets on their balance sheet with "stable funding," which includes term repo funding with a residual maturity of six months or more, but does not include shorter-term repo funding. 81 Fed. Reg. 35,123, 35,134 (June 1, 2016). Finally, under the Federal Reserve Board's risk-based capital rules, global systemically important bank holding companies ("GSIB") must calculate and hold a risk-based capital surcharge, the size of which depends in part on the extent to which the GSIB relies on "short-term wholesale funding," defined to include "funds that the bank holding company must pay under each secured funding transaction . . . with a remaining maturity of 1 year or less". 12 C.F.R. § 217.406(a)(2)(i).

The fourth issue was the concern for the extent of off-balance-sheet exposures, particularly those created through OTC derivatives. LTCM had an unusually large off-balance-sheet exposure even for a hedge fund, but as subsequent events would demonstrate, in the run-up to the 2008 financial crisis other financial institutions would assume large off-balance-sheet exposures as well (with AIG's exposure on credit default swaps perhaps the most prominent example).[106] The United States General Accounting Office identified the OTC derivatives market as a source of systemic risk in a 1994 report.[107] The LTCM episode itself appeared to represent an instance of systemic risk posed by very large OTC derivatives exposure at a major financial firm. Nonetheless, efforts to regulate the OTC derivatives market were blocked by the enactment of the CFMA in 2000 at the specific request of the federal regulatory authorities. As noted above, the judgment reflected in the CFMA would be revisited after the events of September 2008.

The fifth issue was a general lack of rigor in the risk management policy, process and procedures at LTCM and at many of its lenders and counterparties. Although significant strides in counterparty risk management were thought to have been made by large banks and securities firms in the years following the LTCM episode, the Senior Supervisors Group reports issued in March 2008 and October 2009 found widespread risk management failures at many of the largest financial institutions in the run-up to the financial crisis.[108] Federal

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[106] FINANCIAL CRISIS INQUIRY REPORT, *supra* note 4, at 139–142, 243–244 & 265–274.

[107] U.S. GENERAL ACCOUNTING OFFICE, GAO/GGD-94-133, FINANCIAL DERIVATIVES: ACTIONS NEEDED TO PROTECT THE FINANCIAL SYSTEM 10-12 (1994). This report actually occasioned a response by Myron Scholes, then a principal of LTCM. *See* Myron S. Scholes, *Global Financial Markets, Derivative Securities and Systemic Risks,* 12 J. RISK & UNCERTAINTY 271 (1996). In his article, Scholes concluded that there was no empirical evidence to support "the conjectures that derivative contracts can lead to massive failures and create systemic risk." *Id.* at 285. He was nonetheless prescient in identifying the scenario that would two years later lead to the collapse of LTCM:

> Lack of liquidity or depth in markets can lead to the failure of financial institutions. OTC-derivative contracts are illiquid. There is not a developed secondary market for these derivatives, and it is virtually impossible to remarket esoteric derivative contracts, let alone to do so over a short time period. In pricing OTC-derivative contracts, financial institutions must reserve capital or suffer large losses if forced to liquidate their positions over a short period of time. That is, if the markets are illiquid, market-price spreads are likely to increase dramatically when many dealers are trying to reduce the size of their positions and all are on the same side of the market.

Id. at 279–280.

[108] *See* SENIOR SUPERVISORS GROUP, OBSERVATIONS ON RISK MANAGEMENT PRACTICES DURING THE RECENT MARKET TURBULENCE (MARCH 2008); SENIOR SUPERVISORS GROUP, RISK MANAGEMENT

Reserve Board Chairman, Ben Bernanke, would testify in 2009 that no episode in the financial crisis made him angrier than the fact that AIG was in effect running a huge unsupervised hedge fund in its Financial Products unit.[109] Chairman Bernanke might have taken similar umbrage at the fact that the large sophisticated counterparties of AIG's Financial Products unit failed in managing their exposure to AIG, just as the large sophisticated counterparties had failed in managing their exposure to LTCM.

The sixth issue was the deficiencies in the internal risk models used by LTCM and its counterparties. As noted above, the Basel Committee was in 1998 in the process of developing a new approach that would rely to a significant extent on the internal risk models of the largest banks for determining their capital requirements. The use of internal risk models for calculating capital requirements would come to the fore again at the time of the 2008 financial crisis.

The seventh issue was the systemic vulnerability created by the prospect of a mass close-out of derivative positions in the case of a default by a large counterparty, resulting in a fire sale of collateral supporting the derivative positions. The vulnerability arises from the exemption for a derivative counterparty from the automatic stay and other related provisions in the Bankruptcy Code. These exemptions mean that a counterparty could, in the event of a default (or cross-default) by its counterparty, immediately close out the derivative transaction and sell the underlying collateral. Intended originally as a protection for the non-defaulting counterparty, it would likely (by virtue of cross-default provisions) lead to a simultaneous close out and fire sale of collateral by many counterparties. This issue was encountered in September 2008 when several financial institutions entered bankruptcy (e.g., Lehman Brothers) or faced the imminent prospect of bankruptcy (e.g., AIG).

These issues were identified and discussed in the subsequent reports on the LTCM episode, including those issued by the President's Working Group, the United States General Accounting Office, the Basel Committee on Banking Supervision, and the Counterparty Risk Management Policy Group. In some instances, however, recognition of the issues was not coupled with a call for regulatory or legislative action. In other cases, such as those relating to the supervision of OTC derivatives, subsequent legislative action actually prohibited regulatory action. Part II of this article will analyze the results of these

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[109] *Economic and Budget Challenges for the Short and Long Term: Hearing Before the S. Comm. on the Budget,* 111th Cong. 19 (2009) (statement of Ben S. Bernanke, Chairman, Bd. of Gov. Fed. Res. Sys.).

reports and the actions taken in response as well as the actions subsequently taken in the Dodd-Frank Act in response to the re-emergence of these issues in the 2008 financial crisis.