Professional Risk Managers' International Association

Long-Term Capital Management

June 2021

Summary

In the 1990s, Long-Term Capital Management (LTCM) functioned as the largest hedge fund in the United States. It was founded by well-known Wall Street traders and Nobel prize-winning economists. The extreme success LTCM found from 1994-1998 attracted $1 billion plus in investor capital, and yielded fantastic returns for several years from its arbitrage strategy. This put it in the "too-big-to-fail" category.

In 1998, LTCM's leveraged strategies failed due to Russian debt default, and the US government intervened to coordinate the fund's bail out rather than risk a global financial crash. The bailout involved creating a loan fund from a group of Wall Street banks, and it succeeded in bailing out LTCM and liquidating the fund without further issues.[1]

Lessons learned from LTCM's crash were not adequately applied, and some of the same forces contributed to the September 2008 near-collapse of the U.S. financial system.[2]

Main Content

In 1993, well-known bond trader John Meriwether, of investment bank Salomon Brothers, and Nobel prize winning economists Myron Scholes and Robert Merton formed LTCM.[3] The reputations of LTCM's founders attracted investors who each paid $10 million to get into the fund, and agreed to leave the money in for three years. Their investments paid off at a rate of 40 percent returns in 1995 and 1996. Despite the 1997 Asian financial crisis, LTCM provided its investors a 17.1% return that year.[4]

LTCM's strategy for success did not involve speculating based on hunches. Instead, LTCM built mathematical models of the markets and sought to profit from small pricing discrepancies while at the same time avoiding market volatility.[5] Despite this strategy it involved significant risk.

In order to profit, LTCM identified temporary price differences between securities of similar types. This design allowed LTCM to make profits when prices increased or decreased, called arbitrage. Such a strategy created low returns on the dollar. Because of such returns, the fund borrowed large amounts of money to leverage its positions in order to create high rates of return on its capital. The scale of its investments in 1997 further increased this high leverage and allowed LTCM to seek profits in many markets such as equities, mortgage-

---

[1] Hayes, A. (2021, May 4). *Inside long-term capital management (LTCM)*. Investopedia. https://www.investopedia.com/terms/l/longtermcapital.asp

[2] Lee, P. L. (2018, September 10). *A retrospective on the demise of long-term capital management*. CLS Blue Sky Blog | Columbia Law School's Blog on Corporations and the Capital Markets. https://clsbluesky.law.columbia.edu/2018/09/10/a-retrospective-on-the-demise-of-long-term-capital-management/

[3] Hayes, A. (2021, March 30). *How the Black Scholes price model works*. Investopedia. https://www.investopedia.com/terms/b/blackscholes.asp

[4] Amadeo, K. (2020, December 26). How a 1998 bailout led to the 2008 financial crisis. The Balance. https://www.thebalance.com/long-term-capital-crisis-3306240

[5] MacKenzie, D. (2019, November 7). *Donald Mackenzie · Fear in the markets: The ways in which 'finance theory' becomes part of what it examines* · LRB 13 April 2000. London Review of Books. https://www.lrb.co.uk/the-paper/v22/n08/donald-mackenzie/fear-in-the-markets

backed securities, and government bonds. It also delved into derivatives contracts such as options, forwards, and swaps.[6]

When compared with other hedge funds and trading institutions, LTCM stood out due to its high degree of leverage, and the opaqueness of its low level of external monitoring. When failure threatened LTCM, its high degree of leverage was the greatest of large hedge funds that report to the Commodity Futures Trading Commission (CFTC). They held in excess of $125 billion in total assets which dwarfed the next largest hedge fund by almost four times. When its investments lost value LTCM faced severe market liquidity issues, and these were intensified by its dominance in certain markets. (The President's Working Group on Financial Markets, 1999)

LTCM's liquidity problems were often not fully appreciated by its many individual counterparties because the balance sheet and income statements they received from LTCM provided limited information about its risk profile and exposures concentration in certain markets. (The President's Working Group on Financial Markets, 1999)

LTCM, its counterparties, and creditors missed the point that while it achieved diversification across global markets, this was not true when it came to their strategy. It expected that liquidity, credit and volatility spreads would narrow from historically high levels. Instead, these spreads widened worldwide and drove LTCM to the brink of insolvency. The President's Working Group on Financial Markets commented that "In retrospect, it can be seen that LTCM and others underestimated the likelihood that liquidity, credit and volatility spreads would move in a similar fashion in markets across the world at the same time." (The President's Working Group on Financial Markets, 1999)

The events faced by LTCM were extreme and unpredictable, however their risk-management plan displayed weakness by not anticipating the capital needs of their fund when outlier events occur. (The President's Working Group on Financial Markets, 1999)

LTCM could have employed better credit discipline during trading relationships by supporting robust trading activity. A specific concern was how to manage build-up of fragile positions with excessive exposure to risk in a way that avoided trading activity needed to allow liquidity and weather market shocks. (The President's Working Group on Financial Markets, 1999)

In 1998, the financial crisis that began in Asia in 1997 intensified. On August 17, 1998, Russia announced that it was devaluing its currency and defaulting on its bonds. In August alone the fund lost 44 percent of its value. (Michael Fleming and Weiling Liu, 2013) By August 31st, the Dow Jones Industrial Average had plunged by 13 percent. (Amadeo, 2020)

In September, investment bank Bear Stearns, which handled LTCM's bond and derivatives settlements, called in a $500 million payment in order to keep from losing its considerable holdings. This move was

[6] Michael Fleming and Weiling Liu. (2013, November 22). *Near failure of long-term capital management. Federal Reserve History*. https://www.federalreservehistory.org/essays/ltcm-near-failure

influenced by the fact that LTCM's banking agreements had been out of compliance for three months. (Amadeo, 2020)

By this time, LTCM's losses brought the company close to bankruptcy. The investment in LTCM by many banks and pension funds also threatened to push them toward bankruptcy. (Amadeo, 2020) With $126 billion in assets, this made LTCM too big to fail without catastrophic global consequences. As Federal Reserve (Fed) Chairman Alan Greenspan stated, "Had the failure of LTCM triggered the seizing up of markets, substantial damage could have been inflicted on many market participants, including some not directly involved with the firm, and could have potentially impaired the economies of many nations, including our own."[7]

In order to preserve the viability of the US banking system, William McDonough, president of the Federal Reserve Bank of New York headed up the negotiations. On September 23, one of LTCM's creditors, Goldman Sachs presented a financing proposition. Goldman's bid was spearheaded by Warren Buffett's company Berkshire Hathaway, which he proposed should take over the fund. The complicated terms involved the group putting up $4 billion in exchange for management of LTCM. LTCM responded that the Buffett bid "was structurally flawed and therefore not feasible."[8]

McDonough then proceeded to convince more than a dozen banks—all of them also LTCM creditors—to bail out the fund. In return for 90% ownership of the fund, they invested $3.5 billion. (Amadeo, 2020)

The Fed also lowered the fed funds rate and reassured investors that they would do whatever they needed to for the US economy to remain solid. Such intervention was necessary to keep the entire financial system from collapse. (Amadeo, 2020)

While the intervention of the Federal Reserve was crucial in rescuing the fund, the role of the Fed was simply to arbitrate a solution to the crisis, not to put public money at risk, or pressure participants into accepting one course of action or another. (Greenspan, 1998) The losses that occurred were borne by wealthy institutions, LTCM's partners, and employees. (MacKenzie, 2019)

Prior to LTCM's crash and subsequent rescue, the problem of institutions "too big to fail" had only been considered in terms of banks, not hedge funds like LTCM. LTCM was the first time a financial institution apart from banks created a systemic risk, but it would not be the last. This lesson was not learned until 2008, when other nonbank financial firms like AIG, Lehman Brothers, and Bear Stearns lay at the center of the economic meltdown. (Lee, 2018)

A critical factor in LTCM's crash was excessive leverage. Such leverage occurred in other hedge funds and financial institutions as well. On January 1, 1998, LTCM maintained a balance-sheet ratio of more than 25 to

[7] Greenspan, A. (1998, October 1). FRB: Testimony, Greenspan -- private-sector refinancing of the large hedge fund, long-term capital management -- October 1, 1998. Federal Reserve Board. https://www.federalreserve.gov/boarddocs/testimony/1998/19981001.htm
[8] Loomis, C. J. (1998, October 26). *A house built on sand John Meriwether's once-mighty long-term capital has all but crumbled. So why did Warren Buffett offer to buy it?* - October 26, 1998. https://archive.fortune.com/magazines/fortune/fortune_archive/1998/10/26/250015/index.htm

1, an amount that demonstrates a high degree of risk.[9] Excessive leverage not only contributed to LTCM's problems but also the 2008 financial crisis. (Lee, 2018)

In order to leverage its balance sheet, LTCM made use of repurchase agreements called repos. As a means of mitigating risk of their heavy use of repo financing LTCM instead used short-term repos. While short-term repos usage caused problems during the 2008 financial crisis, Columbia Law School's Paul L. Lee calls the use of term repos "a rare positive lesson from the LTCM episode." (Lee, 2018)

Systemic risk arose from the use of LTCM's over-the-counter (OTC) derivatives market as a part of its large off-balance-sheet exposures. LTCM Principal Myron Scholes disagreed with the U.S. General Accounting Office's 1994 assessment of systemic risk in a 1996 journal article, while at the same time acknowledging that, "Lack of liquidity or depth in markets can lead to the failure of financial institutions. OTC-derivative contracts are illiquid." (Lee, 2018)

Value at risk (VaR) models used by LTCM contained deficiencies. Institutions limit very risky positions while at the same time providing traders some flexibility within these limits. But if market movements occur outside those limits traders must cut their losses and sell despite how poor their terms are. As stated by Donald McKenzie:

In August 1998, widespread efforts to liquidate broadly similar positions in roughly the same set of markets seem to have intensified the adverse movements that were the initial problem. Crucially, they also led to greatly enhanced correlations between what historically had been only loosely related markets, across which risk had seemed to be reduced by diversification. (MacKenzie, 2019)

The use of VaR models continued, however, as the 2008 financial crisis revealed. (Lee, 2018)

In 2000, the CFA Institute Journal Review warned that, "The LTCM collapse should serve as a wake-up call. Risk-management at financial institutions is inadequate, and bank regulation is not current with respect to market developments."[10]

This warning went unheeded. Investment firms, emboldened by the possibility of the Fed bailing them out, became more willing to take risks. Indeed, the Fed's bailout of LTCM served as a precedent for their bailout of financial institutions during the 2008 economic crisis. (Amadeo, 2020)

---

[9] The President's Working Group on Financial Markets. (1999, April 28). *Hedge funds, leverage and the lessons of long-term capital management: Report of the president's working group on financial markets.* Commodity Futures Trading Commission | CFTC. https://www.cftc.gov/sites/default/files/tm/tmhedgefundreport.htm

[10] Miyazaki, D. B. (2000, February). *Hedge funds and the collapse of long-term capital management (Digest summary).* CFA Institute. https://www.cfainstitute.org/en/research/cfa-digest/2000/02/hedge-funds-and-the-collapse-of-long-term-capital-management-digest-summary

Lessons Learned

1. Stress Testing of Liquidity Risk. Risk management policies must be rigorous and involve procedures that deal with managing crises since no amount of preparation can predict all of the fluctuations of a real-world financial market.

2. Market Risk. Illiquid markets create bid/offer spreads that diverge dramatically. Market prices will be driven by self-interest and self-preservation.

3. Credit Risk. Solid, enforceable credit policies are mandatory. Changes from such policies should involve approval from the highest levels of management.

4. Governance Risk. Regulatory bodies should not be depended upon for good governance. Instead, firms should assume this responsibility themselves.

5. Operational Risk. Guard against the public disclosure of internal documents as these may be taken out of context and blown out of proportion, resulting in financial panic.

6. Reputational Risk. The perception of the market, customers, and counterparties in regards to risk appetite should be closely guarded. Stress tested processes that includes capital should be allocated as a means of protecting shareholders, stakeholders, and investor capital should negative publicity arise.

Timeline of Key Events

February 1994 — LTCM is founded by former Salomon Brothers Vice Chairman John Meriwether.

July 1997–December 1998 — The Asian Financial crisis begins in Thailand, but spreads across East Asia and wreaks havoc on these economies as well as affecting those of Latin America and Eastern Europe.[11]

August 17, 1998 — Russia suddenly devalues its currency and stops payments on its debt,

thereby defaulting on its bonds.

September 18, 1998 — LTCM officials contacted Federal Reserve Bank of New York President William McDonough about its financial problems.

September 21, 1998 — Bear Stearns calls in a $500 million payment from LTCM. (The President's Working Group on Financial Markets, 1999)

September 23, 1998 — a group of fourteen banks and brokerage firms invested $3.5 billion in LTCM to prevent the firm's imminent collapse.

[11] Carson, M., & Clark, J. (n.d.). *Asian financial crisis*. Federal Reserve History. https://www.federalreservehistory.org/essays/asian-financial-crisis

References

Amadeo, K. (2020, December 26). *How a 1998 bailout led to the 2008 financial crisis.* The Balance. https://www.thebalance.com/long-term-capital-crisis-3306240

Carson, M., & Clark, J. (n.d.). *Asian financial crisis*. Federal Reserve History. https://www.federalreservehistory.org/essays/asian-financial-crisis

Fernando, J. (2021, March 31). *Arbitrage*. Investopedia. https://www.investopedia.com/terms/a/arbitrage.asp

Greenspan, A. (1998, October 1). *FRB: Testimony, Greenspan -- private-sector refinancing of the large hedge fund, long-term capital management -- October 1, 1998*. Federal Reserve Board. https://www.federalreserve.gov/boarddocs/testimony/1998/19981001.htm

Hayes, A. (2021, March 30). *How the Black Scholes price model works.* Investopedia. https://www.investopedia.com/terms/b/blackscholes.asp

Hayes, A. (2021, May 4). *Inside long-term capital management (LTCM)*. Investopedia. https://www.investopedia.com/terms/l/longtermcapital.asp

Lee, P. L. (2018, September 10). *A retrospective on the demise of long-term capital management.* CLS Blue Sky Blog | Columbia Law School's Blog on Corporations and the Capital Markets. https://clsbluesky.law.columbia.edu/2018/09/10/a-retrospective-on-the-demise-of-long-term-capital-management/

Loomis, C. J. (1998, October 26). *A house built on sand John Meriwether's once-mighty long-term capital has all but crumbled. So why did Warren Buffett offer to buy it?* - October 26, 1998. https://archive.fortune.com/magazines/fortune/fortune_archive/1998/10/26/250015/index.htm

MacKenzie, D. (2019, November 7). *Donald Mackenzie · Fear in the markets: The ways in which 'finance theory' becomes part of what it examines* · LRB 13 April 2000. London Review of Books.https://www.lrb.co.uk/the-paper/v22/n08/donald-mackenzie/fear-in-the-markets

Michael Fleming and Weiling Liu. (2013, November 22). *Near failure of long-term capital management.* Federal Reserve History. https://www.federalreservehistory.org/essays/ltcm-near-failure

Miyazaki, D. B. (2000, February). *Hedge funds and the collapse of long-term capital management* (Digest summary). CFA Institute. https://www.cfainstitute.org/en/research/cfa-digest/2000/02/hedge-funds-and-the-collapse-of-long-term-capital-management-digest-summary

The President's Working Group on Financial Markets. (1999, April 28). *Hedge funds, leverage and the lessons of long-term capital management: Report of the president's working group on financial markets.* Commodity Futures Trading Commission | CFTC. https://www.cftc.gov/sites/default/files/tm/tmhedgefundreport.htm

Shirreff, D. (n.d.). *Lessons from the collapse of hedge fund, long-term capital management* (by David Shirreff). IFCI RISK INSTITUTE. https://ifci.ch/146480.htm