Long-Term Capital Management (LTCM) – from boom to bust

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CASE STUDY

🏢 1. **Introduction: What Was LTCM?**

Long-Term Capital Management (LTCM) was a hedge fund launched in **1994** by **John Meriwether**, a former bond trader at Salomon Brothers. What made LTCM unique was its elite team, which included two Nobel Prize-winning economists: **Myron Scholes** and **Robert Merton**.

The Wall Street Journal, 20 Sept 2008. As Markets Swing, Meriwether Hears Echoes of His Own Collapse --- LTCM Lost Billions A Decade Ago; Now, a Second Fall? By Jenny Strasburg

LTCM aimed to revolutionize investing using **mathematics, statistics, and financial engineering**. With this academic firepower, the fund attracted billions in capital from the world's top institutions.

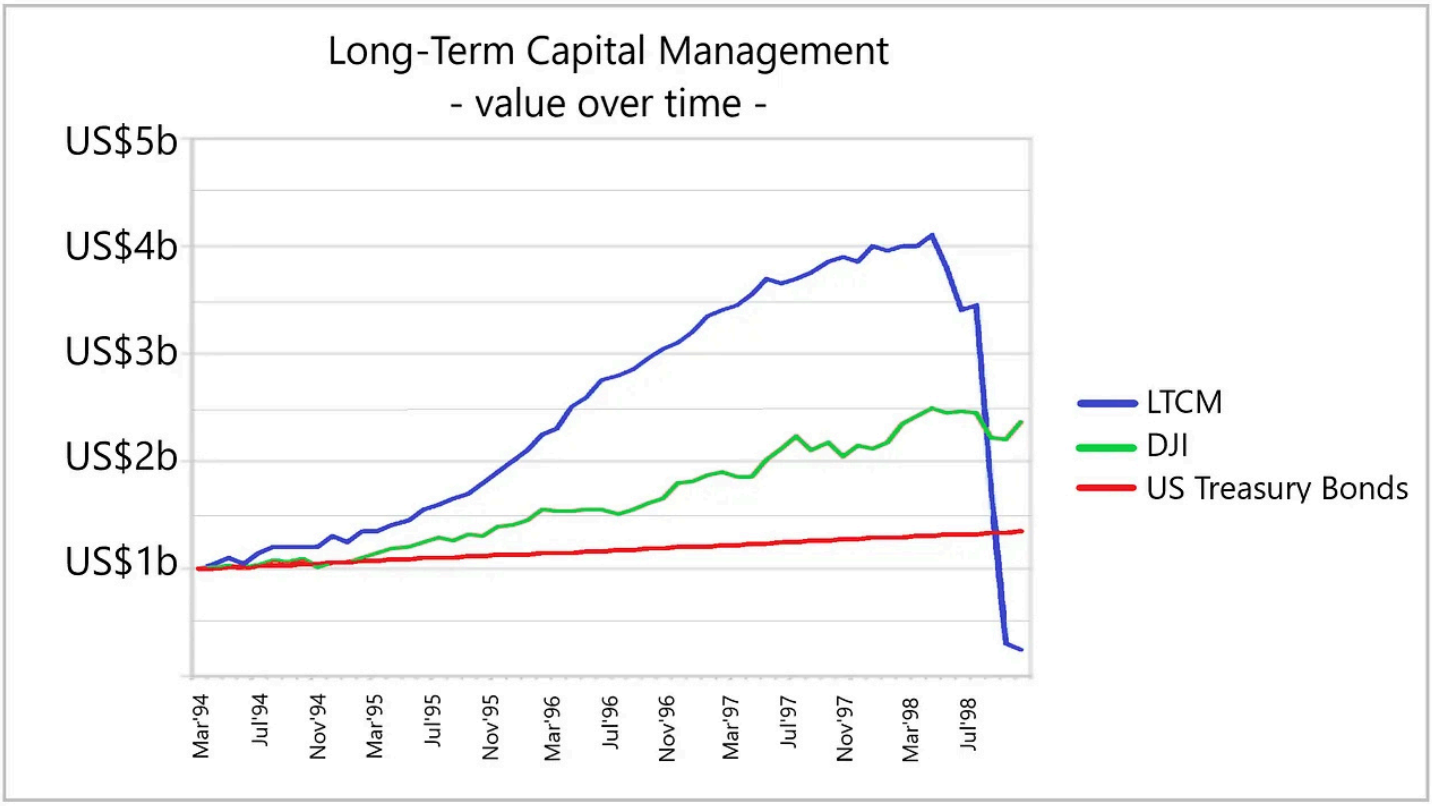
🎯 **Goal**: Use quantitative models to identify and profit from pricing inefficiencies in global financial markets amplified by massive leverage.

📈 2. **Rapid Growth and Strong Performance (1994–1997)**

LTCM quickly delivered exceptional returns and earned the trust of institutional investors.

📊 **Annual Performance**:

- 1994: Strong positive start +20%
- 1995: +43%
- 1996: +41%
- 1997: +17%



By the Numbers:

- Over **$7 billion** in investor capital
- Controlled **$129 billion** in assets
- Held over **$1.25 trillion** in derivative exposure
- Used **leverage ratios** as high as **25:1**—meaning it borrowed $25 for every $1 of equity

This success created a sense of invincibility.

🧠 3. **Investment Strategy: Arbitrage with High Leverage**

LTCM focused on **convergence arbitrage**—betting that price differences between similar financial instruments would narrow over time.

🔧 **Techniques Used**:

- **Bond arbitrage** (e.g., on-the-run vs. off-the-run Treasuries)

- **Interest rate swaps and derivatives**
- **Currency and sovereign debt trades**
- **Short-term mispricing of related assets**

📐 **Assumptions**:

- Markets are efficient and rational
- Prices revert to historical norms
- Risks can be managed statistically
- Liquidity is always available when needed

LTCM didn't just make trades—it **engineered bets** on how the world should behave, not how it actually does during stress.

🌪️ 4. **1998: The Beginning of the Collapse**

LTCM's downfall began when real-world events broke its models.

🌍 **Shock Events**:

- **1997 Asian Financial Crisis**
- **1998 Russian default** and ruble devaluation

📉 **Result**:

- Global investors panicked and rushed to safe assets
- Spreads widened instead of narrowing
- Market correlations broke down
- LTCM's highly leveraged positions unraveled

In a matter of weeks:

- 📉 Lost **$1.9 billion** in August 1998 alone
- 📉 Total losses reached **$4.6 billion**
- 🔻 Equity dropped from $4.8 billion to just **$600 million**

The firm was now **too entangled and too leveraged to unwind safely**.

🏛️ 5. **Federal Reserve Intervention: Preventing Contagion**

LTCM was deeply connected to **Wall Street's largest banks**. Its failure could have caused a global credit freeze.

⚠️ **Systemic Risk**:

- 17+ banks were exposed to LTCM
- Counterparty risk was unknown
- Financial panic was building across markets

Fed’s Solution:

- The **Federal Reserve Bank of New York** coordinated a **private bailout**
- 14 banks (e.g., Goldman Sachs, JPMorgan) contributed **$3.625 billion**
- They took control of LTCM and unwound its positions **gradually**

🛡️ No public funds were used, but the message was clear: LTCM’s collapse could have threatened the global financial system.

📉 6. **Why LTCM’s Models Failed**

The fund’s downfall showed the **limitations of financial modeling** under real-world stress.

Flawed Assumptions:

- **Markets are normally distributed** (Gaussian)
- **Correlations remain stable**
- **Liquidity will always exist**
- **Tail events are rare**

🚨 In Reality:

- In a crisis, **everything correlates**
- Liquidity **evaporates**
- Prices **diverge rapidly**, not converge
- Models **underestimate “black swan” events**

LTCM's models predicted such a loss could happen **once in a billion years**—but it happened in just four.

📊 7. **The Problem with Value at Risk (VaR)**

After LTCM, banks leaned more heavily on **Value at Risk (VaR)** models to manage risk.

Issues with VaR:

- Ignores **extreme, low-probability losses**
- Assumes **normal distributions** and calm markets
- Misses **liquidity risk**—the risk you can’t sell assets
- Encourages **false confidence** in safety
- Can be **manipulated** to lower reported risk

📉 VaR works until it doesn’t—especially when the market is in chaos.

🧩 8. **Behavioral & Structural Weaknesses**

It wasn’t just math that failed—**human behavior and poor incentives** played a big role.

🧠 **Psychological Patterns**:

- **Disaster Myopia**: Forgetting Past Crises
- **Herd Behavior**: Following the crowd blindly

Institutional Flaws:

- Traders rewarded for **short-term gains**, not long-term stability
- Risk managers were often **ignored**
- Firms assumed the government would **step in during crises** (moral hazard)

These factors created a culture where **risk-taking was rewarded and caution was sidelined**.

📘 9. **Conclusion: A Crisis Ignored**

LTCM's collapse should have led to deep reform—but **it didn't**.

What Happened Instead:

- Regulations were **weakened**, not strengthened
- Leverage in banks increased
- Complex derivatives became more popular
- Risk models remained **unchanged**

By ignoring LTCM's lessons, the financial world paved the way for a far worse disaster: the **2008 Global Financial Crisis**.

📢 LTCM was not just a hedge fund collapse—it was a warning. One the world chose to ignore.

🧾 Final Takeaway

LTCM taught us that:

- Even Nobel Prize winners can be wrong
- Overconfidence in models is dangerous
- Leverage can amplify small mistakes into system-wide threats
- Ignoring history guarantees its repetition

📍 **"Those who fail to learn from history are doomed to repeat it." — George Santayana**