

"G7" Financial Crises

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Course in Global Markets and Economic
Policies

LTCM 1998

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Hedge Funds: A Primer (1)

- Hedge funds are generally privately-owned investment funds, and so are not regulated like mutual funds whose owners are public corporations. Furthermore, hedge fund managers are compensated as a percent of the returns they earn. This attracts many investors who are frustrated by mutual fund fees that are paid regardless of fund performance.

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Hedge Funds: A Primer (2)

- Thanks to this compensation structure, hedge fund managers are driven to achieve above market returns. Since they get zero no matter how much money they lose, they are also very risk tolerant. This makes the funds very risky for the investor, who can lose much more than zero.

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Hedge Funds: A Primer (3)

- Hedge fund managers are very good at using sophisticated derivatives, such as futures contracts, options and puts. Basically, these products all do two things: they use small amounts of money, or leverage, to promise large amounts of stocks or commodities. Secondly, they all say they will deliver this stock or commodity at a particular point in time. In that sense, hedge fund managers are trying to time the market, which some would say is very difficult if not impossible to do.

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Who invests in Hedge Funds?

- The primary investors are wealthy individuals and institutions. They typically have a great deal of funds to invest, and can weather significant downturns in their portfolio in their quest for higher returns.
- In addition, many pension funds are realizing they may not have the capital needed to cover the mass of retiring baby boomers, and are trying to outperform the market to cover these obligations.
- Unfortunately, the risky nature of hedge funds, and their lack of regulation, means these pension funds could be less likely to cover their commitments.

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Leveraging (1)

- *"He then relates the case of a typical hedge fund, two times levered. That looks modest until you realise it is partly backed by fund of funds' money (which is three times levered) and investing in deeply subordinated tranches of collateralised debt obligations, which are nine times levered. "Thus every €1m of CDO bonds [acquired] is effectively supported by less than €20,000 of end investors' capital - a 2% price decline in the CDO paper wipes out the capital supporting it. " Gillian Tett, FT, 19 Jan 2007)*

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Leveraging (2)

- Just to clarify this credit pyramid that looks like a Ponzi Game: you start with 20,000 euros invested by some investors into a hedge fund of funds; this is all equity. Then, this fund of funds borrows - at a leverage ratio of three - and invests the initial capital and the borrowed funds into an hedge fund. Then this hedge fund takes this fund of funds investment and borrows - at a leverage ratio of two - and invests the raised capital and the borrowed funds into a deeply subordinated tranches of Collateralized Debt Obligations (that are themselves highly levered instruments with a leverage ratio of nine). So the final investment of 1 million has behind it 20,000 of equity capital and 980,000 of debt. So, if the value/price of the final investment falls by only 2% the entire capital behind it is wiped out.

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Leveraging (3)

- This is a credit house of cards where a dollar of capital is turned into 49 dollars of additional debt to finance an investment of 50. The systemic dangers/risks of this fragile credit house of cards are complicated to assess as they depend on how much of this debt/credit accumulation is concentrated or spread among many financial intermediaries. But, at face value, this kind of leverage ratios looks scary.

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Leveraging (4)

- In a nutshell, this is the best way of describing the objective function of a hedge fund:

$$r_{\text{equity}} = r_{\text{assets}} + L(r_{\text{assets}} - r_{\text{debt}})$$

where r_{equity} is the rate of return on equity capital, r_{assets} is the rate of return on overall capital, r_{debt} is the interest rate on debt and L , the leverage ratio, is the ratio of debt capital to equity capital.

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Leveraging (5)

$$r_{\text{equity}} = r_{\text{assets}} + L(r_{\text{assets}} - r_{\text{debt}})$$

The equation shows that the rate of return on overall capital is augmented by an amplified difference between the rate of return on overall capital and the interest rate on debt. If the leverage is high and capital earns a rate of return greater than the interest rate on debt then all is well, but leverage is a two-edged sword. If the rate of return on overall capital falls below the interest rate on debt then high leverage can turn a mildly bad year into a catastrophe.

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LTCM: Too Smart to Fail, or not?

- Long Term Capital Management was a hedge fund founded in 1994 by a group of very successful Solomon Bros traders;
- LTCM's strategy was to exploit any mismatch in the market thanks to complex mathematical models. These opportunities arose when markets deviated from normal patterns and was likely to re-adjust to the normal patterns. By creating hedged portfolios the risks could be reduced to low levels.

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LTCM: Too Smart to Fail, or not?

- LTCM was operating with a leverage ratio in the neighbourhood of thirty. At that leverage ratio LTCM needed a rate of return on capital that was only about one percent higher than its interest rate on debt to reach impressive levels of above thirty percent.

$$r_{\text{equity}} = r_{\text{assets}} + L(r_{\text{assets}} - r_{\text{debt}})$$

- For LTCM, $L = 30$

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LTCM: Too Smart to Fail, or not?

- LTCM's speculative positions generally involved regularities such as differences between interest rates. It is generally assumed that the markets establish some sort of equilibrium between rates. If differentials deviate from their past values there is the presumption that with time markets will re-establish those equilibrium differences.

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LTCM: Too Smart to Fail, or not?

- What happened when markets went into turmoil in 1998 is investors wanted certainty in that uncertain period (Russian crisis). Investors fled the unpredictable markets for quality securities, ones with a high degree of certainty. Thus higher differentials for the riskier securities did not stop the flight to quality securities.

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LTCM: An Example of a Trade Gone Sour

- LTCM had large positions “betting” that the Euro would indeed be successfully adopted by Italy. Therefore, it shorted German government bonds and went long (bought) Italian government bonds. The underlying idea was that the spread between the two bonds would disappear, or greatly narrow.
- With the rise in risk-aversion, this did not happen and LTCM faced large losses.

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LTCM: Crisis (1)

- Following the Asian Crisis (end-1997), LTCM experienced its first period of turbulence.
- Still, the fund was able to return 20% in 1997 after returning 40% in both 1995 and 1996.
- At the end of 1997, LTCM returned approximately \$2.7 billion in capital to its investors, reducing the capital base of the fund by about 36 percent to \$4.8 billion. Despite this reduction in its capital base, however, the hedge fund apparently did not reduce the scale of its investment positions.
- In May and June 1998 returns from the fund were -6.42% and -10.14% respectively, reducing LTCM's capital by \$461 million.

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LTCM: Crisis (2)

- At the end of August, 1998, the gross notional amounts of the Fund's contracts on futures exchanges exceeded \$500 billion, swaps contracts more than \$750 billion, and options and other OTC derivatives over \$150 billion.
- With regard to leverage, the LTCM Fund's balance sheet on August 31, 1998, included over \$125 billion in assets. Even using the January 1, 1998, equity capital figure of \$4.8 billion, this level of assets still implies a balance-sheet leverage ratio of more than 25-to-1.
- In the first three weeks of September, LTCM's equity tumbled from \$2.3 billion to \$600 million without shrinking the portfolio, leading to a significant elevation of the already high leverage.

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LTCM: The Bailout

- On September 25th, Goldman Sachs, AIG and Berkshire Hathaway offered then to buy out the fund's partners for \$250 million, to inject \$3.75 billion and to operate LTCM within Goldman's own trading division. The offer was rejected and the same day the Federal Reserve Bank of New York organized a bailout of \$3.625 billion by the major creditors to avoid a wider collapse in the financial markets.

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LTCM: Why Was a Bailout Needed?

- LTCM no longer solvent, remember the counterparty risk?
- Add to this, the flight to quality following the Russian crisis;
- Financial markets needed to be cleaned as they were already not functioning properly and risked to freeze.

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THE 2007/8/9(?) CRISIS

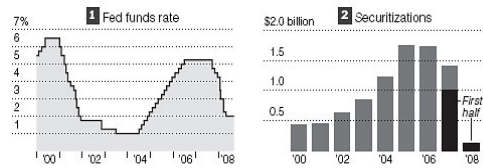
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The current crisis: How did it all start? (1)

<p>1 INTEREST RATES FALL</p> <p>In the aftermath of the bursting of the technology bubble in 2001, the Federal Reserve lowers its benchmark interest rate to 1 percent, from 6.5 percent, over two years. Strong foreign demand for American securities pushes down long-term interest rates.</p>	<p>2 SECURITIZATION</p> <p>At the same time, Wall Street packages more mortgages and other consumer debt into securities for investors like pension funds, foreign central banks and hedge funds. Bankers assert that these instruments — mortgage-backed securities and collateralized debt obligations — will help reduce and disperse risks.</p>	<p>RISKY LOANS</p> <p>Encouraged by low rates and securitization, banks and mortgage companies take bigger risks in home lending by allowing homeowners to borrow more, put little or no money down and not provide proof of their financial condition.</p>	<p>3 HOME PRICES RISE</p> <p>Lower borrowing costs and advent of more risky loans helps drive up home prices, which nearly double from 2000 to 2006. The run-up is greatest in California, Florida, Arizona and Nevada.</p>	<p>LEVERAGE</p> <p>Across the financial system, banks, securities firms and hedge funds increase their use of borrowed money to make investments. They borrow at low rates and make investments that yield a much higher return, putting very little of their own money at risk.</p>
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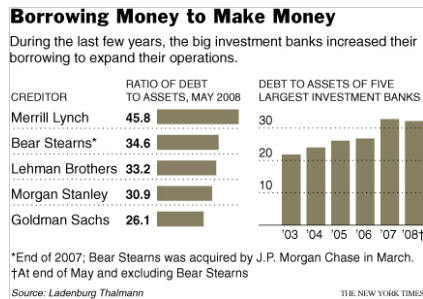
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The current crisis: How did it all start? (2)



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The current crisis: How did it all start? (4)



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The current crisis: The Bust (1)

PRICES FALL

With interest rates rising and homeownership at record levels, prices start to dip in the second half of 2006. The declines start in places like San Diego, where prices jumped the most during the boom.

4 DEFAULTS INCREASE

As more homeowners are unable to refinance or sell their depreciating homes, defaults on mortgages climb. The first signs of trouble emerge among subprime loans but they quickly move to supposedly better-quality loans.

CREDIT CRISIS

With defaults rising and real estate prices falling, the value of mortgage securities falls rapidly and investors leave the market. Banks take more than \$500 billion in write downs and the International Monetary Fund estimates losses could top \$1 trillion.

5 TROUBLES SPIRAL

As losses rise, firms like Lehman Brothers have more difficulty raising capital and investors lose confidence. Banks tighten lending standards, squeezing the economy and the financial system in a self-perpetuating cycle.

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The current crisis: The Bust (2)



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The current crisis: Action (1)

- Market-based approach: Bear Stearns acquired by JPMorganChase;
- Problems spreading as other banks/financial institution in trouble (AIG), money market not functioning properly, lack of transparency and equity market falling (role of short-selling);
- Gov't takeover of Fannie and Freddie (7 Sept '08);

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The current crisis: Action (2)

- Lehman in trouble: nobody wants to buy it... bankruptcy (15 Sept '08).
- Lehman's bankruptcy freezes money market, money is not circulating, equity market fall, flight to quality intensifies (3m T-bill yields 0.05% annualised);

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The Ted Spread

The TED spread measures the gap between the interest rate at which the US Treasury funds itself (3-month T-bills) and the interest rate at which banks lend to each other (3-month LIBOR: London Interbank Offered Rate). And one can see from the Bloomberg chart that risk is rampant in the global capital markets. In fact, it has been increasing since the Bear Stearns debacle.



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The current crisis: Action (3)

- Paulson Plan: necessary but not sufficient measure, why?
- Second version of Paulson Plan: State to enter banks' capital. Global and co-ordinated effort: major industrialised countries following the same approach. Necessary and sufficient conditions met but not enough to bring the market back to normal conditions;
- Why?

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The current crisis: Action (4)

- Additional measures:
 - State guarantees on interbank loans;
 - Fed acting almost like a commercial bank;
 - Further global and co-ordinated monetary easing
- IMF intervention:
 - Iceland, Ukraine, Hungary

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What Next?

- 15 Nov: meeting of the G20, what to expect?
 - More regulation;
 - More gov't presence;
- Risks:
 - Too much regulation;
 - Gov't interference rather than presence
- Fiscal stimulus, is it necessary?

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If you want to know more...

LTCM:

<http://www.sjsu.edu/faculty/watkins/lbcm.htm>

<http://www.businessweek.com/1998/38/b3596001.htm>

<http://www.erisk.com/Learning/CaseStudies/Long-TermCapitalManagemen.asp>

<http://www.imf.org/external/pubs/cat/longres.cfm?sk=15735.0>

<http://www.ustreas.gov/press/releases/reports/hedgfund.pdf> (pp.1-22)

On the current crises

www.youtube.com/watch?v=mzjMTCmo9g

<http://www.econ.berkeley.edu/~eichengr/13%20Questions.pdf>

<http://www.nytimes.com/2008/09/16/business/16nocera.html?pagewanted=1&r=1&hp>

http://www.nytimes.com/interactive/2008/09/15/business/20080915_TURMOIL_TIMELINE.html

<http://www.federalreserve.gov/newsevents/press/other/20080916a.htm>

http://www.economist.com/finance/displayStory.cfm?source=hptextfeature&story_id=12305746

<http://www.ft.com/cms/s/0/92f7ee6a-a765-11db-83e4-0000779e2340.html>

Update chronology at: <http://www.creditwritedowns.com/2008/05/credit-crisis-timeline.html>

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