“G7” Financial Crises

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LTCM 1998

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.

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.

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.

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.

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)*

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 Obbligations (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.

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.

Leveraging (4)

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

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

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.

Leveraging (5)

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

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.

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.

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.

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

- 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.

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.

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.

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.

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.

THE 2007/8/9(?) CRISIS

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

1 INTEREST RATES FALL

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.

2 SECURITIZATION

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.

RISKY LOANS

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.

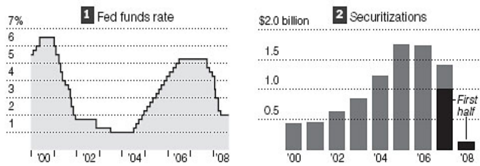
3 HOME PRICES RISE

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.

LEVERAGE

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.

The current crisis: How did it all start? (2)

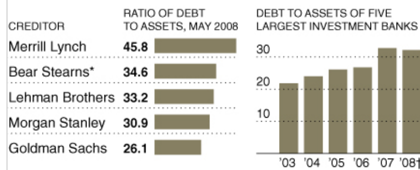


Sources: Federal Reserve Board; Thomson Reuters; Standard & Poor's; Mortgage Bankers Association; Bloomberg

The current crisis: How did it all start? (3)

Borrowing Money to Make Money

During the last few years, the big investment banks increased their borrowing to expand their operations.



*End of 2007; Bear Stearns was acquired by J.P. Morgan Chase in March.
†At end of May and excluding Bear Stearns

Source: Ladenburg Thalmann THE NEW YORK TIMES

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

- What is a CDO?
- Pros and Cons of a CDO
- Why so many banks/institutions had CDOs in their portfolios?

What is a CDO?

- Collateralised Debt Obligation
- Bundle up a number of mortgage contracts
- Divide this package into 3 (or more) tranches:
  - a. senior tranche (first to be repaid, low yield, AAA rated)
  - b. normal tranche (next to be repaid, a bit higher yield, maybe BB)
  - c. junior tranche (last to be repaid, very high yield, speculative rating)

Pros and Cons of a CDO

- Choice of yields
- Diversification
- BUT
- Each CDO was tailor-made or unique, hence: POOR LIQUIDITY

Why so many banks/institutions had CDOs in their portfolios?

- Search for yields (remember the low yields on other instruments, hence they had to go down the quality ladder)
- Regulation allowed them to do that (off-balance sheet vehicles)
- Complacency

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.

The current crisis: The Bust (2)

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);

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);

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.

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? What problems? The end of capitalism?

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

What Next?

Reasons for the crisis

- Appetite for risk was too high, fuelled by:
  - Expansionary monetary policy;
  - "Bankers' greed";
  - Lax regulation/Failure of watchdogs;

- PS Do not forget, no law was broken!

- How are the authorities addressing these issues so as not to repeat the same events to take place again?

Macropolicy: Monetary Policy

- Pre-crisis: policy choice (Fed) and world savings glut (Chinese C/A surplus)

- Now: G7 monetary policy is still expansionary but economic cycle is different. Issues:
  - Exit strategy;
  - Moral hazard (too big to fail);
  - Crowding out;

A Break: Making money with TARP

Awaiting Returns

The government has profited from many of its biggest investments under the Troubled Asset Relief Program. But some companies that received the money, including the largest, have yet to repay it.

	TARP INVESTMENT, in millions	GOV'T PROFIT/LOSS, in millions*	RETURN Annualized*
PAID BACK TARP INVESTMENTS AND BOUGHT WARRANTS HELD BY THE GOVERNMENT			
American Express	$3,389	+ $ 414	+23.4%
Goldman Sachs	10,000	+ 1,418	+20.0
Morgan Stanley	10,000	+ 1,268	+16.8
Northern Trust	1,576	+ 134	+11.1
Bank of New York Mellon	3,000	+ 231	+10.2
State Street	2,000	+ 124	+ 9.2
U.S. Bancorp	6,600	+ 334	+ 8.8
BB&T	3,134	+ 162	+ 7.8
PAID BACK TARP INVESTMENTS BUT GOVERNMENT STILL HOLDS WARRANTS			
JPMorgan Chase	$25,000	+ $1,932	+13.3%
Capital One Financial	3,550	+ 321	+11.6
HAVE NOT REPAID ANY TARP MONEY			
Citigroup	$45,000	+$14,256	+46.8%
Bank of America	45,000	+ 2,535	+10.7
Wells Fargo	25,000	+ 1,313	+ 7.9
PNC Financial	7,579	− 76	− 1.6

*Figures on companies that still owe money are based on dividend payments, the prices paid to redeem warrants held by the government and/or change in stock prices since the government made its investment.

Source: Linus Wilson, University of Louisiana at Lafayette

THE NEW YORK TIMES

Bankers’ Greed

- Pre-crisis:
  - –How was the bonus determined?
  - –Mismatching between disbursement of bonuses and expiration of trades (ex. 30yr swap on 50yr FX future, marked to market each day…)

  But bonuses were approved by the AGM, how about the shareholders?

Shareholders’ Greed

- Shareholders did not voice any objection at the AGMs, they were happy with dividends and the stock appreciation…
- They played a very passive role
- Some of them might even have not understood what the bank/financial institution was doing… but this is not an excuse, rather…

Bankers’/Shareholders’ Greed

- Now: Big confusion and there is a sense in the markets of “take the money and run”, ie: loose monetary policy (=free money), plenty of trading opportunities, no regulation of bonuses, let’s make as much money as we can while we can…

How to address the “greed” issue?

How to address the bonus issue:

- Solution has to be global and not capping/fixing compensations;
- Matching between disbursements and trade expiration (ex. Spot FX trader);
- No penalty if trade goes sour (do engineers pay back salary if cars do not sell?);
- Bonus limits are relatively easy to circumvent: higher base salary

Role of shareholders

- Need to be more active, incentives for doing so? Credible threat of bankruptcy
- Most shareholders are institutions, their clients need to be more active as well

Attitude towards regulation of bonuses: A Glance

- Leaders of the Group of 20 nations in September approved guidelines for financial firms that call for deferred bonuses for senior executives and permit pay to be clawed back if a company has losses later.
- Only 27 percent of U.S. respondents think pay limits will control excessive risk-taking, as opposed to the 65 percent who say such moves will discourage innovation.
- Non-U.S. respondents are less dismissive of executive pay limits, with almost half of Europeans saying such constraints will help control financial risk-taking. Still, 41 percent of Europeans, along with 47 percent of Asians, agree pay limits will discourage innovation.

Failure of watchdogs

- Failure of watchdogs
  - Internal (risk dept):
    - worked within regulations…
  - Market-based (rating agencies)
    - Pre-crisis: God
    - Now: No credibility (in my view). Still important, though, since many funds have a clause in their covenants saying that “the fund will invest in securities rated XYZ or above”
  - Istitutional watchdogs (FSA)

Regulation/Institutional watchdogs

- Pre-crisis: focussed on insider trading and frauds (like misrepresentations, cooking the books etc… remember Enron!) and not on "risk". Prudential regulation for Banks was not adequate, as it could not keep up with market developments (but accepting off-balance sheet vehicles…)

Regulation/Institutional watchdogs

- Now: Scrambling to find a compromise everybody agrees with, whilst some countries are going ahead alone in some fields (especially regarding the adoption of populist measures on bonuses). Probably some agreement will be reached on capital adequacy ratios and the likes but politicians are more concerned with "punishing bankers" rather than devising a framework for a safer banking activity

Regulation, Regulation, Regulation

- What are the issues on the table?
  - Re-introduce Glass-Steagall?
  - Tobin tax?
  - New capital/asset ratios (limits to leveraging)
  - New OTC rules?
  - More state in the banks'capital?

Notice: New rules/regulation must be adopted worldwide.

In conclusion

Bankers who think that events of the last 2 years were a blip are in for some disappointment. The sector will eventually be more regulated and the bonuses will be paid differently. The challenge is to lay the foundations for sounder rules and regulations while the economy is still weak. The current policy-mix is creating a new bubble, together with massive crowding out and moral hazard ("too big to fail"), which makes the adoption of tighter but market-friendly rules worldwide even more pressing.

If you want to know more…

LTCM:
http://www.sjsu.edu/faculty/watkins/ltcm.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=mzJmTCYmo9g
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