# Hedge Funds and Financial Crises

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# Facts about Hedge Funds

- Estimated to be a $1 trillion worldwide industry, with approximately 8350 active hedge funds in the world.
- Includes a variety of investment strategies, some of which use leverage while others are more conservative and employ little or no leverage. Many hedge fund strategies seek to reduce market risk specifically by shorting equities or derivatives.
- Their returns over a sustained period of time have outperformed standard equity and bond indexes with less volatility and less risk of loss than equities.
- The popular misconception is that all hedge funds are volatile -- that they all use risky techniques and strategies and place large “bets” on stocks, currencies, bonds, commodities, and gold, while using lots of leverage. In reality, less than 5% of hedge funds are of this sort. Most hedge funds use derivatives only for hedging or don’t use derivatives at all, and many use no leverage.

- The original purpose of hedge funds is capital preservation. Hedge fund managers have a number of risk management tools at their disposal that could help reduce downside risk. This enables them to deliver consistent returns in all market conditions.

  Hedge fund managers also employ investment tools that can greatly increase returns. Unlike mutual funds, hedge funds can use short selling, invest in derivatives, leverage their portfolios, and hold highly concentrated positions - strategies that can amplify returns greatly. In fact, composite hedge fund indexes have consistently equaled or beat the aggregate market indexes (such as DJIA and Russell 2000) in the last five years.

# 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.
- Hedge funds are also exempt from requirements that apply to mutual funds for the protection of investors, such as regulations requiring a certain degree of liquidity, regulations requiring that mutual fund shares be redeemable at any time, regulations protecting against conflicts of interest, regulations to assure fairness in the pricing of fund shares, disclosure regulations, and regulations limiting the use of leverage. These exemptions permit hedge funds to engage in leveraging and other sophisticated investment techniques to a much greater extent, which typically allows them to generate higher returns than other investment vehicles. Of course, like mutual funds, hedge funds are subject to the anti-fraud provisions of U.S. federal securities laws.
- Also, notice that many investors are frustrated by mutual fund fees that are paid regardless of fund performance.

# Hedge Funds: A Primer (2)

- Furthermore, hedge fund managers are compensated as a percent of the returns they earn plus a fixed part (the “infamous” 2-20).
- Thanks to this compensation structure, hedge fund managers are driven to achieve above market returns.
- A win-win situation, or not?

# Hedge Funds: A Primer (3)

- Since HF managers get 2% no matter how much money they lose, they are also very risk-tolerant.
- The worst case scenario for a manager is closing the fund and losing the 2-20;
- This makes the funds very risky for the investor, who can lose much more than the 2-20.

# Hedge Funds: A Primer (4)

- How do hedge fund managers achieve above-market returns? By using sophisticated derivatives, such as futures contracts, options and puts? Not always, nowadays is a combination of many techniques: macro, technicals, derivatives....

# Examples of Hedge Funds

- **Aggressive Growth:** Invests in equities expected to experience acceleration in growth of earnings per share. This type of fund hedges by shorting equities where earnings disappointment is expected or by shorting stock indexes.
- **Distressed Securities:** Buys equity, debt, or trade claims at deep discounts of companies in or facing bankruptcy or reorganization. Profits from the market's lack of understanding of the true value of the deeply discounted securities and because the majority of institutional investors cannot own below investment grade securities.
- **Emerging Markets:** Invests in equity or debt of emerging (less mature) markets which tend to have higher inflation and volatile growth. Short selling is not permitted in many emerging markets, and, therefore, effective hedging is often not available.
- **Fund of Funds:** Mixes and matches hedge funds and other pooled investment vehicles. This blending of different strategies and asset classes aims to provide a more stable long-term investment return than any of the individual funds. Volatility depends on the mix and ratio of strategies employed.
- **Income:** Invests with primary focus on yield or current income rather than solely on capital gains. May utilize leverage to buy bonds and sometimes fixed income derivatives in order to profit from principal appreciation and interest income.
- **Macro:** Aims to profit from changes in global economies, typically brought about by shifts in government policy which impact interest rates, in turn affecting currency, stock, and bond markets. Participates in all major markets -- equities, bonds, currencies and commodities -- though not always at the same time. Uses leverage and derivatives to accentuate the impact of market moves.

# 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. Hence, they are willing to take on more risk.

# 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).

# Leveraging (3)

- 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.
- 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 should have looked scary.

# Leveraging (4)

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

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

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 1998

# 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

# LTCM: Too Smart to Fail, or not?

- LTCM's speculative positions generally involved regularities such as differences between interest rates. It was generally assumed that the markets establish some sort of long term equilibrium between rates. If differentials deviate from their past values there is the presumption that with time markets will re-establish those equilibrium differences.
- However, as more and more hedge funds appeared on the scene, these mismatching opportunities became scarcer and scarcer, thus prompting LTCM to increase its leverage and take riskier “bets”. It also started taking “directional” trades, based on macroeconomic or political views

# LTCM: Too Smart to Fail, or not?

- What happened when markets went into turmoil in 1997 (Asian crisis) and again and more severely in 1998 (Russian crisis) is that investors wanted certainty in that uncertain period. Investors, thus, fled the unpredictable markets for quality securities, ones with a high degree of certainty (= USTreasuries).
- Thus higher differentials for the riskier securities did not stop the flight to quality securities.

# 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 ROLE OF HEDGE FUNDS IN FINANCIAL CRISIS

# Vultures, Locusts, Hyenas...

- Hedge funds are often depicted as “bad”, but they are not (personal conflict of interest here...)
- What are the principles guiding HFs’ actions?

A) Respect the law/regulations;

B) Maximize return for client, given the fund’s limits, covenants and the likes.

“We are now witnessing how damaging the trading of money can be to the economies of some countries and their currencies. It can be abused as no other trade can. Whole regions can be bankrupted by just a few people whose only objective is to enrich themselves and their rich clients.... We welcome foreign investments. We even welcome speculators. But we don’t have to welcome share- and financial-market manipulators. We need these manipulators as much as travellers in the good old days needed highwaymen”.

Dr. Mahathir Bin Mohamad, Prime Minister of Malaysia in the Wall Street Journal in 1997

# The ERM crisis

- A clear example of when an individual hedge fund influenced prices relates to the well-known currency speculation by George Soros and his Quantum Fund in the early 1990s.
- The Quantum Fund was a global macro fund and Soros speculated in this case against fixed European exchange rates. The reason that the exchange rates were challenged was that they did not correspond with the macroeconomic conditions in the countries concerned.
- In the autumn of 1992, the Quantum Fund sold large volumes of the British pound and the Swedish krona, among other currencies, against the US dollar forward rate (short positions). The attempts of the respective central banks to defend their fixed exchange rates became too costly and they were forced to abandon them. The Bank of England was forced to abandon its defence of the pound on 16 September. In that month, the Quantum Fund had a return of 25 per cent.
- As a result, there was a rapid decline in the value of the currencies and the Quantum Fund was able to make billions. The Quantum Fund is said to have made a profit of one billion pounds on its short positions in the British pound alone.
- Soros came under heavy criticism for his actions but responded that since the currencies were obviously incorrectly valued a price adjustment would in any case have been necessary sooner or later.

# Is a Tobin Tax the right answer to minimise hedge funds' "destabilising" activity?

"It is usually agreed that casinos should, in the public interest, be inaccessible and expensive. And perhaps the same is true of stock exchanges."

John Maynard Keynes, writing in the 1930s

# What is a Tobin Tax? (1)

- The “Tobin tax” was originally proposed in the early 1970s by James Tobin, an influential American macroeconomist and recipient of the Nobel prize for economics.
- His idea was prompted by the collapse of the Bretton Woods system in 1971, which replaced an arrangement of fixed exchange rates ultimately based on the US dollar’s peg to gold with a period of volatile floating exchange rates.
- He wanted to discourage short-term currency speculation, which makes it difficult for countries to implement independent monetary policies by moving money quickly back and forth between countries with different interest rates.
- Tobin’s goal was to “throw sand in the wheels” of global finance with a simple tax that would be small enough to make short-term purely financial movements uneconomical – without being a burden on trade.As described by Tobin, the tax involves applying a small charge – of as little or less than 0.1 per cent – on foreign currency transactions to protect countries from exchange-rate volatility caused by short-term currency speculation.

# What is a Tobin Tax? (2)

- The proposal never caught on in the 1970s but received renewed attention during the Asian financial crisis in the late 1990s when it became a cause celèbre for the anti-globalisation movement. A number of organisations, such as France-based Attac, sprang up to campaign for a Tobin tax long after the economist had died in 2002.
- Today the Tobin tax is back in vogue, with the European Commission, France and Germany all pushing for a broad financial transactions tax. They argue that it will make the financial industry pay a fairer share of the burden brought on by the financial crisis as well as compensate governments for their rescue of the industry. Some also argue that the tax can reduce what they see as harmful high-frequency trading.
- The original purpose of putting the brakes on currency speculation has been somewhat eclipsed among activists who have increasingly seen the Tobin tax as a good way of raising revenue for economic and social development.
- Tobin himself disowned activists' adoption of his proposal for revenue-raising purposes, which he thought missed the point of the proposal: to reduce the socially harmful effects of finance while keeping its benefits.

# Tobin taxes

- Though they are often presented as a radical measure, Tobin-style levies on capital transactions are in fact widespread. The stamp duties paid on British share purchases in Keynes's time survive to this day, though they are easily sidestepped by investors using derivatives. Home sales also attract a turnover tax in Britain and elsewhere. In America investors pay a tiny fee on asset transactions to cover regulatory costs. In principle such levies are useful if they meet the test for taxes: to raise revenue without harming price signals and enterprise too much.

# Examples of Tobin Taxes

| COUNTRY | TAX (in basis points) | TAX REVENUE AS A PERCENTAGE OF: TOTAL REVENUE | GNP | MARKET VALUE OF EQUITY |
|---|---|---|---|---|
| **FRANCE** | 30 & 15 | 0.26% | 0.12% | 1.19% |
| **GERMANY** | 25 | 0.14% | 0.04% | 0.28% |
| **ITALY** | 15 | 1.10% | 0.38% | 6.10% |
| **JAPAN** | 18 & 55 | 1.42% | 0.17% | 0.34% |
| **NETHERLANDS** | 50 on small trades | 0.63% | 0.32% | 1.17% |
| **SWEDEN** | 100 | 0.87% | 0.36% | 1.55% |
| **SWITZERLAND** | 15 & 30 | 2.33% | 0.48% | 0.94% |
| **UNITED KINGDOM** | 50 | 0.80% | 0.30% | 0.01% |
| **UNITED STATES** | various state taxes | 0.17% | 0.03% | 0.08% |

Source: L.H. Summers and V.P. Summers, "When Financial Markets Work Too Well: A Cautious Case For a Securities Tax," *Journal of Financial Services Research*, Vol. 3, 1989, p. 275.

# Tobin Tax: The Pros...

- Reduction of speculation. By placing a tax on currency trades, it makes currency trading slightly less attractive. By marginally increasing the cost of currency trading there should be a reduction in speculative trading, leading to greater exchange rate stability in floating exchange rate systems.
- Raising Revenue. The global trade in currencies has grown at a very rapid rate. In 2007, the global currency market was worth $3,200 billion a day in 2007, or £400,000 billion per annum. Of this, trade in Pound Sterling as £34,000 bn a year. A tax set at 0.01% on just Sterling trades would raise £2bn a year. A tax on global currency trades could raise significant sums.
- Redistribution from Financial Sector to Developing World. The idea of a Tobin Tax is often seen as a good way to redistribute income from developed world to the developing world. The idea has been seized upon by many aid charities and anti-globalisation protesters. Though James Tobin has often stated that the main purpose of the tax is not about raising revenue and redistributing wealth, but its impact on reducing speculation.

# Tobin Tax: The Cons...

- Difficult to tax all transactions, it may encourage investors to find ways around the tax.
- Decline in currency flows may harm functioning of markets and lead to poor liquidity in currency markets.
- Tax may be insufficient to prevent speculative flows and currency movements which are driven by economic fundamentals.
- A tax may discourage 'hedging' which is a way of insuring against currency movements rather than discouraging speculation.
- If it was introduced unilaterally in one country, e.g. UK then it would lead to loss of financial business as firms trade in other currencies / countries
- There may be better ways to deal with speculation e.g. placing lump sum insurance schemes on financial firms who invest in speculative markets.

# The Swedish Experience (1)

- In January 1984, Sweden introduced a 50-basis-point tax on the purchase or sale of an equity security. Thus a round trip (purchase and sale) transaction resulted in a 100-basis-point tax. The tax applied to all trades in Sweden using local brokerage services and to stock options. It did not apply to gifts or bequests. In July 1986 the rate was doubled. The next year, a tax at half the normal rate was also applied against trades between dealers. In January 1989, a tax on fixed-income securities was introduced.
- The tax on fixed-income securities was considerably less than on equities, as low as 0.2 basis points for a security with a maturity of 90 days or less. On a bond with a maturity of five years or more, the tax was three basis points.
- On 15 April 1990, the tax on fixed-income securities was abolished. In January 1991 the rates on the remaining taxes were cut in half and by the end of the year they were abolished completely.

See: Marion Wrobel, FINANCIAL TRANSACTIONS TAXES: THE INTERNATIONAL EXPERIENCE AND THE LESSONS FOR CANADA, 1996; http://dsp-psd.tpsgc.gc.ca/Collection-R/LoPBdP/BP/bp419-e.htm#(4)end

# The Swedish Experience (2)

- With the 1986 announcement that the equity tax would double, 60% of the trading volume of the 11 most actively traded Swedish share classes, accounting for one-half of all Swedish equity trading, moved to London; thus 30% of all Swedish equity trading moved offshore. By 1990, more than 50% of all Swedish trading had moved to London. Foreign investors reacted to the tax by moving their trading offshore while domestic investors reacted by reducing the number of their equity trades;
- Even though the tax on fixed-income securities was much lower than that on equities, the impact on market trading was much more dramatic. During the first week of the tax, the volume of bond trading fell by 85%, even though the tax rate on five-year bonds was only three basis points. The volume of futures trading fell by 98% and the options trading market disappeared. Trading in money market securities, which faced a tax as low as 0.2 basis points, fell by 20%. This reaction was due in large part to the existence of a wide variety of non-taxed substitutes. Once the taxes were eliminated, trading volumes returned and grew substantially in the 1990s;

# The Swedish Experience (3)

- The revenues from taxes were disappointing; for example, revenues from the tax on fixed-income securities were initially expected to amount to 1,500 million Swedish kroner per year. They did not amount to more than 80 million Swedish kroner in any year and the average was closer to 50 million;
- As taxable trading volumes fell, so did revenues from capital gains taxes, almost entirely offsetting revenues from the equity transactions tax that had grown to 4,000 million Swedish kroner by 1988. Another reason for the reduction in capital gains taxes was the decline in share prices associated with the initial announcement of the tax and its increase. On the day that the tax was announced, share prices fell by 2.2%. But there was leakage of information prior to the announcement, which might explain the 5.35% price decline in the 30 days prior to the announcement. When the tax was doubled, prices again fell by another 1%. These declines were in line with the capitalized value of future tax payments resulting from expected trades. It was further felt that the taxes on fixed-income securities only served to increase the cost of government borrowing, providing another argument against the tax.

# The bottom line is...

- A Tobin Tax would be unworkable unless all governments signed up to it (and perhaps even if they did);
- A levy would harm the liquidity of financial markets, making asset prices more volatile.

# How about banning short-selling?

- What is short-selling?
- In short selling, investors borrow stocks/bonds to sell them, betting that they can buy them back at a lower price and profit from the difference.
- A "naked" short seller has not arranged to borrow the stock at the time of sale.
- Sources:
- http://lexicon.ft.com/
- Financial Service Authority, Short selling, February 2009 (http://www.fsa.gov.uk/pubs/discussion/dp09_01.pdf)

# Short-selling: The Pros

- Economic theory suggests that short selling can contribute to the accurate valuation of stocks (market efficiency). If investors are constrained from short selling, their unrevealed negative information will manifest itself only once the market is about to drop. Empirical evidence: mixed;
- Short selling can contribute to liquidity. Liquidity is essentially the ease of completing a trade. In the absence of short selling restrictions, not only will short sellers themselves find it easier to trade (i.e. to sell stocks despite not yet owning them), but so will their trading partners, i.e. those from whom they borrow stocks in advance of short selling and those from whom they purchase shares later on to 'cover the short';
- Short selling is also a common hedging strategy, thus making transactions attractive that would otherwise be too risky.

# Short-selling: The Cons

- Market instability, i.e., short selling may amplify price swings. Empirical evidence: mixed;
- Market abuse, i.e., are short-selling decisions based on insider info? Some evidence on the significance of informed short selling ahead of announcements of price-sensitive information to the market (notice, though, that this is an “insider trading” matter, short selling is an instrument to carry out insider trading)

# The analysis of the Fed

"In response to the sharp decline in prices of financial stocks in the fall of 2008, regulators in a number of countries banned short selling of particular stocks and industries. Evidence suggests that these bans did little to stop the slide in stock prices, but significantly increased costs of liquidity. In August 2011, the U.S. market experienced a large decline when Standard and Poor's announced a downgrade of U.S. debt. Our cross-sectional tests suggest that the decline in stock prices was not significantly driven or amplified by short selling. Short selling does not appear to be the root cause of recent stock market declines. Furthermore, banning short selling does not appear to prevent stock prices from falling when firm-specific or economy-wide economic fundamentals are weak, and may impose high costs on market participants."

**Market Declines: Is Banning Short Selling the Solution?**

Robert Battalio, Hamid Mehran, and Paul Schultz

*Federal Reserve Bank of New York Staff Reports, no. 518*

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http://www.ny.frb.org/research/staff_reports/sr518.pdf

# A tale of two bank shares...


Source: Bloomberg