Amaranth Debacle : Lessons in Risk Management

Amaranth Advisors LLC was an American multistrategy hedge fund managing US$9 billion in assets. In September 2006, it collapsed after losing roughly US$6 billion in a single week on natural gas futures. The failure was the largest hedge fund collapse in history.

The company was founded by Nicholas Maounis and based in Greenwich, Connecticut. Throughout much of the firm's history, convertible arbitrage was the firm's primary profit center. As more and more capital began adopting convertible arbitrage strategies through the early 2000s, trading opportunities became more difficult to find. By 2004-2005, the firm had shifted much of its capital to energy trading. Amaranth’s energy desk was run by a Canadian trader named Brian Hunter who placed "spread trades" in the natural gas market.1 When gas prices surged last year after Hurricane Katrina, Amaranth raked in more than $1 billion in profits. This also translated into a very large bonus for the head of its energy trading desk, 32-year-old Brian Hunter, who was ranked the 29th highest-earning member of his profession by Trader Monthly magazine, which estimated his annual income at $75-100 million in 2005.2

Immediate Cause

Hoping for a repeat performance in the crude prices, Amaranth wagered with 8:1 leverage that the price of the March '07 and March '08 futures contracts would increase relative to the price of the April '07 and April '08 contracts (i.e., they were "long" the March contracts and "short" the April contracts). Unfortunately for Amaranth, they did not. The spread between the March and April 2007 contracts, for example, went down from US$2.49 at the end of August 2006 to US$0.58 by the end of September 2006. Since they were trading a calendar spread they would have been protected as long as the spread remained constant or increased with the March futures remaining costlier. But, the reverse happened the price of March contract fell by a greater amount than the April contract and thus shrinking the spread. The price decline was catastrophic for Amaranth. As Amaranth's losses piled up, it got margin calls from its bankers and counter-parties. To meet these obligations, it desperately tried to unwind its positions, often at a discount resulting in a loss of about $6 billions.

1 http://en.wikipedia.org/wiki/Amaranth_Advisors
2 http://www.thehindubusinessline.com/iw/2007/01/14/stories/2007011400921500.htm
What followed then..

On September 17, 2006, Mr Nicholas Maounis, the founder and CEO of the hedge fund, wrote a letter to its investors informing them that the Amaranth multi-strategy funds had experienced significant losses in their energy-related investments following a dramatic move in natural gas prices. Finally, J. P. Morgan Chase and Citadel Investments, another hedge fund, bought the complete book of energy trades from Amaranth for an undisclosed price.

Investors in Amaranth included fund-of-funds managed by top-notch Wall Street investment banks such as Goldman Sachs and Morgan Stanley and pension funds of 3M and the San Diego County Employees Retirement Association. All these investors will lose some money.

Analysing the Causes of Failure

(1) Poor Position Sizing: Amaranth's Risk Management team was obviously napping or naive. They were running a 'diversified' fund which had, at the end of August, about $3 billion (30 per cent of the fund) invested in natural gas futures, a highly volatile commodity (it experiences price changes of up to 66 per cent in six months; figure below shows that).

Historically, the spread in future prices for the March and April contracts have not been easily predictable. The spread is dependent on meteorological and sociopolitical events whose uncertainty makes the placing of such large bets a precarious matter. So, absolute
position limits on Mr Hunter's positions should have kicked in long ago. The Risk Management unit of the hedge fund should have also tracked and spotted the tightening spreads between the March and April 2007 contracts a lot earlier. This would have helped to reverse positions and stop losses before it became a crisis.

(2) **Poor Risk Management:** A VaR (Value-at-Risk) analysis would have given an indication of the size of possible losses, given the high volatility of the underlying commodity (natural gas). Under no circumstance should this VaR cross more than 5-10 per cent of the corpus of the fund. Here, it crossed 35-40 per cent of the fund. Technology can be harnessed to process the large amounts of historical data that need to be analysed to track trends and arrive at accurate VaR figures.

(3) **Ignoring the (il)liquidity risk:** The numbers also suggest that Amaranth held a significant portion of the gas futures market, which has less liquidity compared to the oil futures market. Unwinding large positions in an illiquid market compounds the problem. When Amaranth got margin calls caused by losing positions, they had to sell their open positions in the market. Very soon, the market got wind of what was happening and took advantage of Amaranth's desperate situation by offering poor prices. The high amount of debt that Amaranth carried relative to owned funds (gearing) further exacerbated the problem. As a result, Amaranth incurred further losses of about $3 billion simply trying to unwind its positions. So risk managers need to track positions not only with relation to the total funds deployed, but also with relation to the size of the market.

**Lessons for investors in hedge fund**

Lastly, investors in hedge funds need to be aware of the risks that they are getting into. They need to track the exposure of the fund to various sectors. At the end of the day, it is their money on the line. In the case of Amaranth, its investors, many of them sophisticated in terms of market knowledge, did not do this.

**References:**
The Bear Stearns Debacle

In mid of June 2007, an America based hedge fund Bear Stearns Co. (BSC), the High-Grade Structured Credit Strategies Enhanced Leverage Fund, suffered huge loses in the collateralized debt obligations (CDOs) market. The loses were so huge that the fund was planning to auction $4 billion of its holdings to raise cash. The fact that Merrill Lynch, the fund's banker decided to seize $800 million of collateral from the fund and recover the margin money gives an ample idea about the seriousness of the situation.

What caused the fall of Bear Stearns?
The fund manager Ralph Cioffi had bet on the subprime market to deteriorate and they went short on the ABX index, a proxy for the subprime market when it came down sharply from 97 at the start of the year to 62 levels during February 2007. The irony in the whole story is that the fund manager was generally correct but the timing of his calls was generally incorrect. The subprime market did deteriorate beyond 62 levels but that happened in the month of June. Meanwhile ABX rose from its low of 62 to 72 in May (as can been seen in the figure). At these levels Bear Stearns booked losses on its position because of the redemption calls from the investors who got the wind of the losses at BSC when ABX started rising. Here the fund manager took the view that some of the collateralized debt obligations would maintain their value and took a long position, but that didn’t happen and the index began to fall sharply in the month of June adding to the woes and losses of the fund.
Concerned that an internal hedge fund at Bear Stearns Cos. wouldn't be able to meet a margin call, Merrill Lynch & Co., one of the fund's biggest lenders, seized $400 million of its assets and is preparing to auction them off. The seizure by Merrill - which could spur other lenders to seize fund assets - may well mean the end of Mr. Cioffi's two funds.

The latest auctions of sub-prime mortgages by BSC have been watched closely by Wall Street. Especially concerned are other hedge funds that may be forced to lower value of their own assets if the Bear sale fetches bids that are well below what the fund says they are worth. Unlike the high-quality and liquid mortgage-backed bonds that Bear sold in mid June, assets up for sale this time comprise securities that are considerably less liquid.

Mr. Cioffi's 30-day plan, beginning from mid June is to salvage his fund, which he has run since August 2006 and is geared to sophisticated investors. Built on about $600 million in investor capital, $40 million of which came from Bear and a group of firm executives, the fund had borrowed at least $6 billion in additional capital from a dozen Wall Street lenders, say people familiar with the matter, including Merrill, Goldman Sachs Group Inc., Bank of America Corp. and Deutsche Bank AG. It was run by Bear executives alongside a larger sister fund with relatively little borrowed capital.

**Summary**

In both the hedge fund failures it can be observed that there were many points in common and the same are as follows:

1. Both the funds took a very large position size on a single bet. Ideally hedge funds should diversify their bets across different assets so as to avoid a catastrophe in the event of bet going wrong. The woes were further compounded by highly leveraged positions.
2. Both the hedge funds went in to contracts which were highly illiquid. As a result when the unwinding of positions was done a part of it had to be done at firesale prices (low prices realized on a distress sale).
3. In both the cases the investors in the hedge had reputed banks/funds/investment banks as investors who did not bother to keep track of where their investments were being deployed. A timely check by these investors on reckless betting by the hedge fund managers could have prevented such debacles or atleast it could have mitigated the magnitude of failure.

**References:**