

Hedge Fund Attributions: Sources of Return (and Risk)

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I. Inefficiencies

Capacity of Hedge Fund Industry (With an “Alpha Advantage”) in Billions of Dollars

Allowable Inefficiency in Private, Mutual Fund and Institutional Fund Management

		-0.5%	-0.75%	-1.0%
Required Excess	10.0%	2,750	4,125	5,500
Return for	7.5%	3,667	5,500	7,333
Hedge Funds	5.0%	5,500	8,250	11,000

Similar Argument also in Ross (2004).



II. Risk Premia

- **Relative-Value Bond Funds**
- **Equity Risk Arbitrage**
- **Value vs. Growth Strategy**
- **Small Capitalization Stocks**
- **High-Yield Currency Investing**
- **Weather Fear Premia in the Commodity Futures Markets**



Examples were drawn from Cochrane (1999a,b), Harvey and Siddique (2000), Low (2000), and Till (2001).

Source of Graphic: Rembrandt's Storm on the Sea of Galilee, Isabella Stewart Gardner Museum, Boston, and Cover of Against the Gods: The Remarkable Story of Risk by Peter Bernstein, John Wiley & Sons, 1996.



III. Illiquidity

Benefits: Tick-by-Tick Evaluation of a Good Investment is Painful

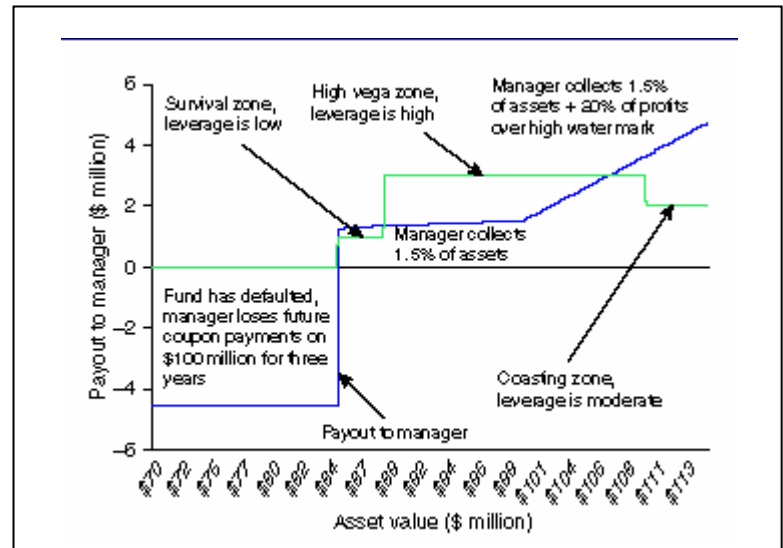
Probability of Making Money at Different Scales

<u>Scale</u>	<u>Probability</u>
1 year	93%
1 quarter	77%
1 month	67%
1 day	54%
1 hour	51.3%
1 minute	50.17%
1 second	50.02%

Source: Taleb (2001), Table 3.1.

Costs: Default and Liquidation Risk

Dynamic Leverage Profile for Hedge Funds



Source: Krishnan and Nelken (2003).



IV. Eventful Periods

- Managed Futures programs are now expected to benefit from event risk.

The Myth of Hedge Fund Market Neutrality: Good News for Managed Futures

Declines in the S&P 500 of Greater Than 6% Since 1980

		<u>S&P 500</u>	<u>Managed Futures a</u>	<u>Hedge Funds b</u>
1	Sep-Nov 1987	-30%	8.5%	
2	Apr-Jul 2002	-20%	10.6%	-4.4%
3	Jun-Sep 2001	-17%	1.9%	-3.8%
4	Jul-Aug 1998	-15%	5.8%	-9.4%
5	Feb-Mar 2001	-15%	4.0%	-3.8%
6	Jun-Oct 1990	-15%	19.4%	-1.9%
7	Sep-Nov 2000	-13%	2.7%	-6.4%
8	Sep 2002	-11%	1.9%	-1.5%
9	Dec 2002 to Feb 2003	-10%	12.1%	0.5%
10	Aug-Sep 1981	-10%	0.1%	
11	Feb-Mar 1980	-10%	10.3%	
12	Dec 1981-Mar 1982	-10%	7.9%	
13	Sep 1986	-8%	-4.2%	
14	Dec 1980-Jan 1981	-7%	9.5%	
15	Feb-Mar 1994	-7%	0.3%	-2.1%
16	Jan-Feb 2000	-7%	0.9%	6.8%
17	Jan 1990	-7%	3.2%	-2.1%
18	May-July 1982	-7%	1.4%	
19	Jul-Sep 1999	-6%	-0.5%	0.7%
	Average	-12%	5%	-2%

a: CISDM (Center for International Securities and Derivatives Markets) Trading Advisor Qualified Index.

b: HFR (Hedge Fund Research) Fund Weighted Composite Index.

Updated from Horwitz (2002), as cited in Till and Eagleeye (2005).



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Appendix: Inferring Amaranth's Exposures

From publicly available information, we can perform a returns-based analysis on Amaranth's energy strategy.

We can create two spreads, which would have benefited from potential weather shocks:

- (1) a Natural Gas spread combination in the March-April contracts for delivery in 2007, 2008, 2009, 2010, and 2011; &**
- (2) a Natural Gas spread combination of Long Winter (December, January, February, and March) and Short Summer (June, July, August, and September) for delivery in 2007/8 through 2010/11.**

Source: Till, Hilary, "EDHEC Comments on the Amaranth Case: Early Lessons from the Debacle," EDHEC-Risk Publication, 10/2/06, which, in turn, was cited in the European Central Bank's Financial Stability Review, December 2006.



<http://www.edhec-risk.com/features/RISKArticle.2006-10-02.0711/attachments/EDHEC%20Comments%20on%20Amaranth%20Case.pdf>



Appendix (Continued)

From news reports:

- (a) the fund lost -\$560 million on September 14th, and
- (b) lost about -\$3.2 billion during the week of September 11th.

We have two equations with two unknowns.

Let n = the number of NYMEX-equivalent contracts for Spread (1);
and let q = the number of NYMEX-equivalent contracts for Spread (2).

Solve for n and q based on the publicly stated losses of the fund and the scale of the losses in Spread (1) and Spread (2):

$n = 86,308$ spreads, and
 $q = 11,331$ spreads.



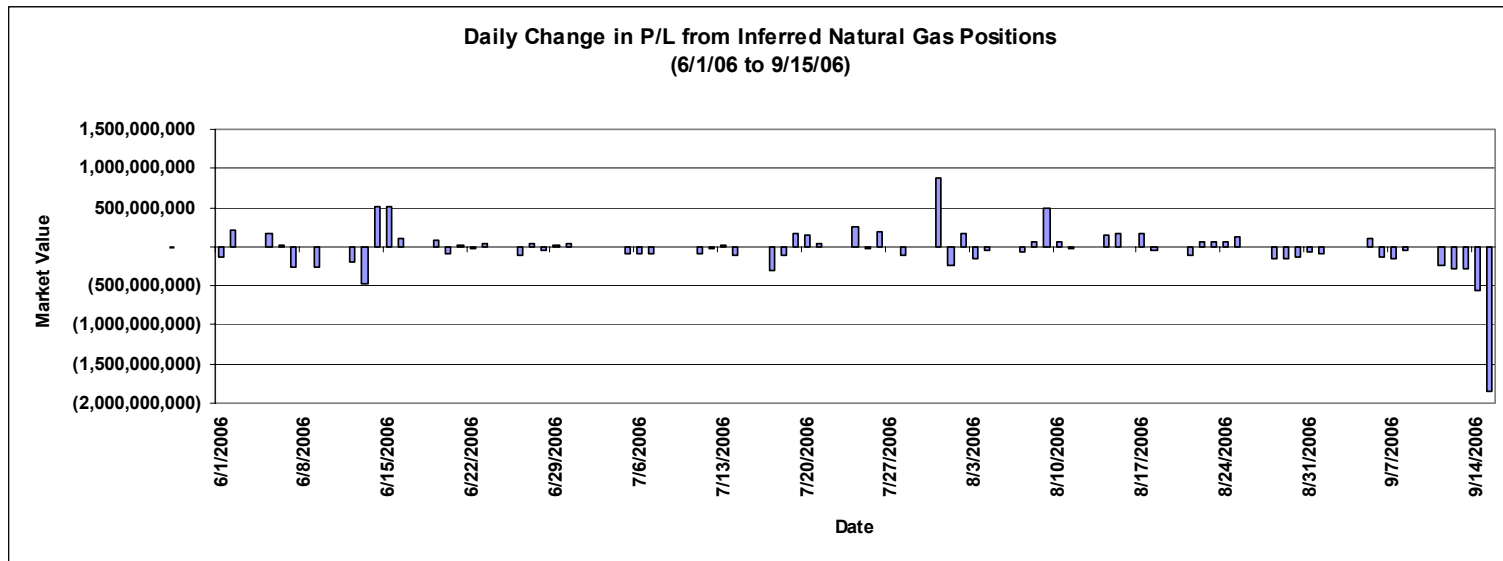
Source of Graphic: Jenny Anderson, "Betting on the Weather and Taking an Ice-Cold Bath," New York Times, 9/29/06.

For further information, see also: Till, Hilary, "Inferences about the Amaranth Case and the Emerging Maturity of the Hedge Fund Industry," Hedge Funds Review, January 2007.



Appendix (Continued)

As of 8/31/06, these spreads would have provided a long notional exposure of \$61.4-billion in the Winter Natural Gas contracts, and a short notional exposure of \$45.8-billion in Summer, Fall, and Spring contracts, providing a net exposure of \$15.6-billion.



The strongest point we can make regarding Slide 8's calculations is that the fund's key risk positions were highly correlated to our inferred exposures.

