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HEDGE FUND DUE DILIGENCE AT LEMAN ALTERNATIVE ASSET MANAGEMENT COMPANY

It was early January 2008 in Geneva, Switzerland, and the day looked as though it might turn snowy. Thierry Michaud's office window offered a view of Lake Leman and, in the background, white-capped Mont Blanc. A storm was forming above the lake, and the view of the Alps was disappearing.

Michaud was a senior VP with Leman Alternative Asset Management Company (LAAMCO), a fund of hedge funds known for alternative investments. LAAMCO had a research-driven approach to constructing diversified portfolios of hedge funds for investors and utilized advanced risk analytics to monitor the portfolios. The company had close ties with major private Swiss banks that invested money for high-net-worth Europeans. Michaud was the team specialist looking at U.S. equity market-neutral hedge funds. These funds had both long and short positions on U.S. stocks and options to maintain a market-neutral position.

Michaud had received a prospectus for the Fairfield Guard, Ltd. hedge fund (**Exhibit 1**). As a derivatives expert, it was his job to analyze the prospectus and to present a recommendation at the investment board meeting the next day. As usual in these cases, he had spent the morning putting together the data he would need and making phone calls. Every contact he called confirmed the stellar track record of the hedge fund.

The prospectus stated that the fund's main strategy utilized collars also known as *bull spreads* or *split-strike conversions*. The collar option trading strategy entailed holding securities that tracked the S&P 500 Index, then purchasing out-of-the-money (OTM) put options on the S&P 500 Index, and selling OTM call options for a notional amount equivalent to the value of the securities. The purpose of the long put options was to limit the downside risk, and the put hedge was largely financed by the short call options. Looking at the reported monthly returns in the prospectus, it was clear why this fund was getting such strong recommendations (**Exhibit 1**). The fund had only experienced negative returns in 14 out of the 205 months since inception; in those 14 months, the losses had never exceeded −1%. This was remarkable!

This case was prepared by Pedro Matos, Associate Professor of Business Administration. It involves fictional individuals and hypothetical descriptions of historic business decisions and was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation.

Backtesting the Fairfield Guard Hedge Fund

Michaud was intrigued. How could a collar strategy generate such attractive returns? One of the steps he usually took in his due diligence was to backtest a hedge fund's investment strategy. In other words, he would simulate how much an average investor would generate implementing a collar strategy. (**Exhibit 2** provides more details on the strategy and all the formulae.) For this backtest, Michaud planned to compare these simulated returns against the Fairfield Guard's actual performance and try to quantify how much value the manager (BLM Investment Securities, LLC) had added.

The backtesting exercise was simple: Michaud would start with $1 at the inception date of the hedge fund (December 1, 1990) and simulate the hypothetical growth of that $1 as if he had been executing the collar strategy until December 2007. At the start of December 1990, he would invest $1 in the S&P 500 Index and, simultaneously, buy the notional equivalent of that $1 in one-month OTM put options on the S&P 500 Index with a given strike K_1 (below the current level of the index) and sell an equivalent amount of one-month OTM call options on the S&P 500 Index with a given strike K_2 (above the current level of the index). The net gain (cost) of the long put and short call position would have to be invested (financed) at the risk-free rate. A month later, at the end of December 1990, he would have the growth in value of the S&P 500 Index and receive (or pay) interest on the net gain (cost) of the long put and short call position from the previous month, but he would also collect any profit from the long OTM put and any loss from the short OTM call. He would then reinvest the net proceeds for the coming month. At the start of January 1991, he would again go long on S&P 500 Index stocks and invest or finance the net premium of the long OTM put and short OTM call for the next month at the new risk-free rate. He would repeat this procedure for all months until the end of December 2007.

Michaud put together a spreadsheet with all the data he might need (**Exhibit 3**). He knew the building blocks of the collar first involved the underlying asset: S&P 500 Index stocks. The index could be replicated using an index fund that tracked the S&P 500 Index. To measure the risk-free rate, he would take the one-month U.S. Treasury bill (T-bill) rate. For the one-month call and put options, he needed to calculate the option premiums using the Black-Scholes model (**Exhibit 2**).

For Black-Scholes option valuation, Michaud had four inputs (stock index level, strike, time, and the risk-free interest rate), but he was missing the critical fifth input: the prevailing level of volatility. He needed to find the level of volatility that had prevailed every month since November 1990. Fortunately, the level of implied volatility on S&P 500 Index options had been trading as a contract itself with data was available from the Chicago Board Options Exchange (CBOE) Volatility Index (known as the VIX). The VIX was a measure of the implied volatility

of S&P 500 Index options. It was quoted in percentage points and consisted of the expected movement in the S&P 500 Index over the upcoming 30-day period, which was then annualized.[1]

The Task at Hand

Before he backtested the collar strategy, Michaud looked at the size of the task at hand. He calculated the growth in value of $1 invested in the Fairfield Guard hedge fund compared to its benchmark, the HFRX EH: Equity Market Neutral Index (HFRI EH), which tracked the performance of equity market-neutral hedge funds, as well as to investing $1 in the S&P 500 Index and in one-month T-bills (**Exhibit 4**).

He found that the performance of the Fairfield Guard hedge fund had been as stellar as his contacts had said. A $1 investment at the fund's inception would have grown to $5.78 by the end of December 2007, handily outperforming peer U.S. equity market-neutral hedge funds tracked by the HFRI EH, which had grown to only $4.05 over the same period. Fairfield Guard's performance was quite an achievement, given that the HFRI EH had underperformed a similar investment in the S&P 500 Index—that investment would have grown to an accumulated value of $4.56 by the end of December 2007. A risk-free strategy of putting $1 in one-month T-bills (and rolling over to new T-bills every month) would have grown the balance to only $1.95. On top of that, Fairfield Guard's stellar returns were remarkable for their low volatility. Fairfield Guard had an annualized Sharpe ratio of 2.77, well above the annualized Sharpe ratio of 1.50 for HFRI EH and of 0.77 for the S&P 500 Index.

Michaud knew this was going to be another fun afternoon of number crunching. Fairfield Guard represented a good investment opportunity for LAAMCO. On the other hand, the lack of transparency in some of these hedge fund vehicles made due diligence a necessity, and his analysis was crucial in verifying and certifying LAAMCO's investments.

[1] This would not take into account any option "smile" effects (i.e., options on strikes below and above the spot price typically traded at different implied volatility levels). So OTM calls and OTM puts would be priced at the same level of volatility.

Exhibit 1

HEDGE FUND DUE DILIGENCE AT LEMAN ALTERNATIVE ASSET MANAGEMENT COMPANY

Investment Prospectus for Fairfield Guard, Ltd.

Fund name	Fairfield Guard, Ltd.	Strategy	Equity market-neutral
Fund manager	Fairfield Bermuda, Ltd.	Fund assets (as of 12/31/2007):	$8,300 million
Currency:	USD	Management fee	1%
Inception date	1/12/1990	Incentive fee	20%
Minimum investment	$100,000		

Strategy Description:	The fund seeks to obtain capital appreciation of its assets principally through the utilization of a nontraditional options strategy described as a collar (or split-strike conversion) to which the fund allocates the predominant portion of its assets. The investment strategy has defined risk and reward parameters. The establishment of a typical position entails(1) the purchase of a group or basket of securities that are intended to highly correlate to the S&P 500Index, (2) the purchase of out-of-the-money S&P 500 Index put options with a notional value approximately equal to the market value of the basket of equity securities, and (3) the sale of out-of-the-money S&P 500 Index call options with a notional value approximately equal to the market value of the basket of equity securities. The basket typically consists of 140 to 150 stocks in the S&P 500 Index. The primary purpose of the long put option is to limit the market risk of the stock basket at the strike price of the long put. The primary purpose of the short call option is to largely finance the cost of the put hedge and increase the stand-still rate of return. The split-strike conversion strategy is implemented by BLM Investment Securities, LLC (BLM), a broker dealer registered with the Securities and Exchange Commission through accounts maintained by the fund in that firm. The services of BLM and its personnel are essential to the continued operation of the fund and its profitability.

Source: Created by case writer.

Exhibit 1 (continued)

Monthly Returns (percentage points):												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	0.29	(0.11)	1.64	0.98	0.81	0.34	0.17	0.31	0.97	0.46	1.04	0.23
2006	0.70	0.20	1.31	0.94	0.70	0.51	1.06	0.77	0.68	0.42	0.86	0.86
2005	0.51	0.37	0.85	0.14	0.63	0.46	0.13	0.16	0.89	1.61	0.75	0.54
2004	0.88	0.44	(0.01)	0.37	0.59	1.21	0.02	1.26	0.46	0.03	0.79	0.24
2003	(0.35)	(0.05)	1.85	0.03	0.90	0.93	1.37	0.16	0.86	1.26	(0.14)	0.25
2002	(0.04)	0.53	0.39	1.09	2.05	0.19	3.29	(0.13)	0.06	0.66	0.09	0.00
2001	2.14	0.08	1.07	1.26	0.26	0.17	0.38	0.94	0.66	1.22	1.14	0.12
2000	2.14	0.13	1.77	0.27	1.30	0.73	0.58	1.26	0.18	0.86	0.62	0.36
1999	1.99	0.11	2.22	0.29	1.45	1.70	0.36	0.87	0.66	1.05	1.54	0.32
1998	0.85	1.23	1.68	0.36	1.69	1.22	0.76	0.21	0.98	1.86	0.78	0.26
1997	2.38	0.67	0.80	1.10	0.57	1.28	0.68	0.28	2.32	0.49	1.49	0.36
1996	1.42	0.66	1.16	0.57	1.34	0.15	1.86	0.20	1.16	1.03	1.51	0.41
1995	0.85	0.69	0.78	1.62	1.65	0.43	1.02	(0.24)	1.63	1.53	0.44	1.03
1994	2.11	(0.44)	1.45	1.75	0.44	0.23	1.71	0.35	0.75	1.81	(0.64)	0.60
1993	(0.09)	1.86	1.79	(0.01)	1.65	0.79	0.02	1.71	0.28	1.71	0.19	0.39
1992	0.42	2.72	0.94	2.79	(0.27)	1.22	(0.09)	0.85	0.33	1.33	1.35	1.36
1991	3.01	1.40	0.52	1.32	1.82	0.30	1.98	1.00	0.73	2.75	0.01	1.56
1990												2.77

Average return(monthly)	0.86%
Std. dev.(monthly)	0.72%
Average return(annualized)	10.84%
Std. dev.(annualized)	2.48%
Sharpe ratio(annualized)	2.77

Source: Created by case writer.

Exhibit 2

HEDGE FUND DUE DILIGENCE AT LEMAN ALTERNATIVE ASSET MANAGEMENT COMPANY

The Collar Option Strategy

Let S_t be the spot price of the underlying asset (S&P 500 Index) at month t. The collar (or bull spread) option strategy is composed of taking four positions:

1) A long position on the underlying S_t.
2) A long position on OTM put options P with strike price K_1(where $K_1<S_t$) and maturity T = 1/12 years (i.e. maturing in $t+1$, in one month's time). The option premium is $P_t(K_1)$.
3) A short position on OTM call option C with strike price K_2 (where $K_2>S_t$) and maturity T = 1/12 years (i.e. maturing in $t+1$, in one month's time) . The option premium is $C_t(K_2)$.
4) The net premium $[C_t(K_2) - P_t(K_1)]$ is invested (or borrowed) at the risk-free rate R_t.

The payoff of the strategy at the end of each month is

$$\text{P\&L(collar)}_{t+1} = (S_{t+1} - S_t) + [C_t(K_2) - P_t(K_1)] * (1 + R_t) + \text{Max}[K_1 - S_{t+1}, 0] - \text{Max}[S_{t+1} - K_2, 0].$$

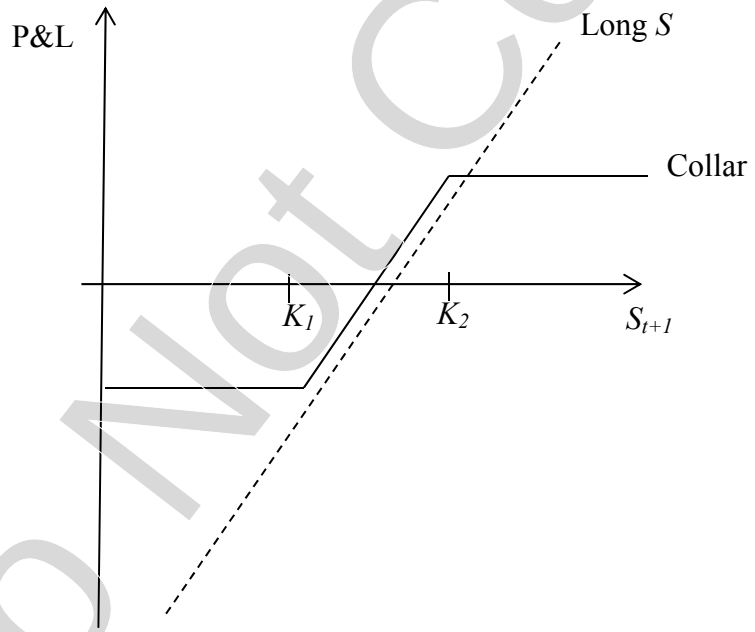


Exhibit 2 (continued)

Black-Scholes option valuation:[1]

- Put option premium

$$P_t(K_1) = K_1 \, e^{-R*T} \, N(-d_2) - S_t \, N(-d_1)$$

$$d_1 = [ln(S_t/K_1) + (R+\sigma^2/2)T\,] \,/\, [\sigma \, \text{sqrt}(T)]$$
$$d_2 = d_1 - \sigma \, \text{sqrt}(T)$$

- Call option premium

$$C_t(K_2) = S_t \, \text{N}(d_1) - K_2 \, e^{-R*T} \, \text{N}(d_2)$$

$$d_1 = [ln(S_t/K_2) + (R+\sigma^2/2)T\,] \,/\, [\sigma \, \text{sqrt}(T)]$$
$$d_2 = d_1 - \sigma \, \text{sqrt}(T)$$

Source: Created by case writer.

[1] For simplicity, stock dividends are ignored.

Exhibit 3

HEDGE FUND DUE DILIGENCE AT
LEMAN ALTERNATIVE ASSET MANAGEMENT COMPANY

Monthly Historical Data, November 1990 to December 2007

Month	Fairfield Guard Monthly Returns	Value of $1 in Fairfield Guard	HFRI Equity Market Neutral	Value of $1 in HFRI EH Index	S&P 500 Index Monthly Returns	Value of $1 in S&P 500 Index	One-month Treasury Bills Monthly Returns	Value of $1 in One-Month Treasury Bills	VIX (implied volatility)	Value of $1 in Backtested Collar
Nov-1990		1.000		1.000	6.00%	1.000	0.57%	1.000	22.16%	1.000
Dec-1990	2.77%	1.028	2.01%	1.020	2.47%	1.025	0.60%	1.006	26.38%	?
Jan-1991	3.01%	1.059	2.51%	1.046	4.15%	1.067	0.52%	1.011	20.91%	?
Feb-1991	1.40%	1.073	0.04%	1.046	6.73%	1.139	0.48%	1.016	21.23%	?
Mar-1991	0.52%	1.079	2.70%	1.074	2.22%	1.164	0.44%	1.021	16.88%	?
Apr-1991	1.32%	1.093	(0.01%)	1.074	0.03%	1.165	0.53%	1.026	18.24%	?
May-1991	1.82%	1.113	(0.02%)	1.074	3.85%	1.210	0.47%	1.031	15.93%	?
Jun-1991	0.30%	1.117	0.56%	1.080	(4.78%)	1.152	0.42%	1.035	19.55%	?
Jul-1991	1.98%	1.139	2.50%	1.107	4.48%	1.204	0.49%	1.040	15.18%	?
Aug-1991	1.00%	1.150	0.28%	1.110	1.96%	1.227	0.46%	1.045	14.46%	?
Sep-1991	0.73%	1.158	1.92%	1.131	(1.91%)	1.204	0.46%	1.050	15.85%	?
Oct-1991	2.75%	1.190	0.97%	1.142	1.19%	1.218	0.42%	1.054	15.48%	?
Nov-1991	0.01%	1.190	1.17%	1.156	(4.42%)	1.164	0.39%	1.058	20.26%	?
Dec-1991	1.56%	1.209	2.07%	1.180	11.18%	1.294	0.38%	1.062	19.31%	?
Jan-1992	0.42%	1.214	0.36%	1.184	(1.98%)	1.269	0.34%	1.066	17.40%	?
Feb-1992	2.72%	1.247	0.96%	1.195	0.95%	1.281	0.28%	1.069	16.68%	?
Mar-1992	0.94%	1.259	0.58%	1.202	(2.18%)	1.253	0.34%	1.073	16.18%	?
Apr-1992	2.79%	1.294	(0.03%)	1.202	2.79%	1.288	0.32%	1.076	15.53%	?
May-1992	(0.27%)	1.290	0.11%	1.203	0.10%	1.289	0.28%	1.079	13.86%	?
Jun-1992	1.22%	1.306	0.62%	1.211	(1.72%)	1.267	0.32%	1.082	13.35%	?
Jul-1992	(0.09%)	1.305	1.24%	1.226	3.92%	1.316	0.31%	1.086	13.17%	?
Aug-1992	0.85%	1.316	(0.35%)	1.221	(2.40%)	1.285	0.26%	1.089	13.58%	?
Sep-1992	0.33%	1.320	1.17%	1.236	0.91%	1.297	0.26%	1.091	14.28%	?
Oct-1992	1.33%	1.338	1.04%	1.249	0.21%	1.299	0.23%	1.094	16.15%	?
Nov-1992	1.35%	1.356	1.18%	1.263	3.03%	1.339	0.23%	1.096	13.01%	?
Dec-1992	1.36%	1.374	1.54%	1.283	1.01%	1.352	0.28%	1.100	12.57%	?
Jan-1993	(0.09%)	1.373	1.91%	1.307	0.71%	1.362	0.23%	1.102	12.42%	?

Exhibit 3 (continued)

Monthly Historical Data, November 1990 to December 2007

Feb-1993	1.86%	1.399	1.06%	1.321	1.05%	1.376	0.22%	1.105	13.16%	?
Mar-1993	1.79%	1.424	1.67%	1.343	1.87%	1.402	0.25%	1.107	12.53%	?
Apr-1993	(0.01%)	1.424	(0.14%)	1.341	(2.54%)	1.366	0.24%	1.110	12.42%	?
May-1993	1.65%	1.447	0.58%	1.349	2.28%	1.397	0.22%	1.112	13.47%	?
Jun-1993	0.79%	1.459	2.37%	1.381	0.07%	1.398	0.25%	1.115	11.26%	?
Jul-1993	0.02%	1.459	0.63%	1.390	(0.53%)	1.391	0.24%	1.118	11.73%	?
Aug-1993	1.71%	1.484	0.91%	1.402	3.44%	1.439	0.25%	1.121	11.85%	?
Sep-1993	0.28%	1.488	2.44%	1.437	(1.00%)	1.424	0.26%	1.124	12.99%	?
Oct-1993	1.71%	1.513	(0.10%)	1.435	1.94%	1.452	0.22%	1.126	11.46%	?
Nov-1993	0.19%	1.516	(1.45%)	1.414	(1.26%)	1.434	0.25%	1.129	13.76%	?
Dec-1993	0.39%	1.522	0.77%	1.425	0.99%	1.448	0.23%	1.131	11.66%	?
Jan-1994	2.11%	1.554	0.78%	1.436	3.23%	1.495	0.25%	1.134	10.63%	?
Feb-1994	(0.44%)	1.547	0.58%	1.445	(2.99%)	1.450	0.21%	1.137	14.87%	?
Mar-1994	1.45%	1.570	0.44%	1.451	(4.61%)	1.383	0.27%	1.140	20.45%	?
Apr-1994	1.75%	1.597	0.92%	1.464	1.18%	1.399	0.27%	1.143	13.77%	?
May-1994	0.44%	1.604	(0.95%)	1.451	1.24%	1.417	0.32%	1.146	13.03%	?
Jun-1994	0.23%	1.608	0.58%	1.459	(2.68%)	1.379	0.31%	1.150	14.97%	?
Jul-1994	1.71%	1.636	0.37%	1.464	3.15%	1.422	0.28%	1.153	11.13%	?
Aug-1994	0.35%	1.641	(0.35%)	1.459	3.76%	1.476	0.37%	1.157	11.97%	?
Sep-1994	0.75%	1.654	0.02%	1.459	(2.69%)	1.436	0.37%	1.162	14.28%	?
Oct-1994	1.81%	1.684	(0.12%)	1.458	2.07%	1.466	0.38%	1.166	14.56%	?
Nov-1994	(0.64%)	1.673	(0.45%)	1.451	(3.96%)	1.408	0.37%	1.170	15.95%	?
Dec-1994	0.60%	1.683	0.82%	1.463	1.25%	1.425	0.44%	1.176	13.20%	?
Jan-1995	0.85%	1.697	0.22%	1.466	2.44%	1.460	0.42%	1.181	11.96%	?
Feb-1995	0.69%	1.709	1.42%	1.487	3.61%	1.513	0.40%	1.185	11.75%	?
Mar-1995	0.78%	1.722	1.77%	1.513	2.73%	1.554	0.46%	1.191	13.37%	?
Apr-1995	1.62%	1.750	1.86%	1.542	2.81%	1.597	0.44%	1.196	11.75%	?
May-1995	1.65%	1.779	0.60%	1.551	3.62%	1.655	0.54%	1.202	13.77%	?
Jun-1995	0.43%	1.787	0.92%	1.565	2.13%	1.691	0.47%	1.208	11.38%	?
Jul-1995	1.02%	1.805	2.23%	1.600	3.18%	1.744	0.45%	1.214	13.49%	?
Aug-1995	(0.24%)	1.801	0.98%	1.616	(0.03%)	1.744	0.47%	1.219	11.52%	?
Sep-1995	1.63%	1.830	1.85%	1.646	4.01%	1.814	0.43%	1.224	12.74%	?
Oct-1995	1.53%	1.858	1.58%	1.672	(0.50%)	1.805	0.47%	1.230	13.83%	?
Nov-1995	0.44%	1.866	0.78%	1.685	4.10%	1.879	0.42%	1.235	11.58%	?

Exhibit 3 (continued)

Monthly Historical Data, November 1990 to December 2007

Dec-1995	1.03%	1.885	1.03%	1.702	1.74%	1.911	0.49%	1.241	12.52%	?
Jan-1996	1.42%	1.912	2.18%	1.739	3.26%	1.974	0.43%	1.247	12.53%	?
Feb-1996	0.66%	1.925	0.95%	1.756	0.69%	1.987	0.39%	1.252	17.04%	?
Mar-1996	1.16%	1.947	0.86%	1.771	0.79%	2.003	0.39%	1.257	18.88%	?
Apr-1996	0.57%	1.958	0.35%	1.777	1.34%	2.030	0.46%	1.262	15.83%	?
May-1996	1.34%	1.984	1.39%	1.802	2.29%	2.077	0.42%	1.268	16.07%	?
Jun-1996	0.15%	1.987	1.37%	1.826	0.23%	2.081	0.40%	1.273	13.68%	?
Jul-1996	1.86%	2.024	1.62%	1.856	(4.57%)	1.986	0.45%	1.278	19.46%	?
Aug-1996	0.20%	2.028	0.78%	1.870	1.88%	2.023	0.41%	1.284	17.01%	?
Sep-1996	1.16%	2.052	0.66%	1.883	5.42%	2.133	0.44%	1.289	16.95%	?
Oct-1996	1.03%	2.073	2.10%	1.922	2.61%	2.189	0.42%	1.295	18.11%	?
Nov-1996	1.51%	2.104	0.16%	1.925	7.34%	2.349	0.41%	1.300	17.14%	?
Dec-1996	0.41%	2.113	0.95%	1.944	(2.15%)	2.299	0.46%	1.306	20.92%	?
Jan-1997	2.38%	2.163	1.20%	1.967	6.13%	2.440	0.45%	1.312	19.47%	?
Feb-1997	0.67%	2.178	0.12%	1.969	0.59%	2.454	0.39%	1.317	21.10%	?
Mar-1997	0.80%	2.195	0.43%	1.978	(4.26%)	2.350	0.43%	1.323	22.14%	?
Apr-1997	1.10%	2.219	0.96%	1.997	5.84%	2.487	0.43%	1.328	20.06%	?
May-1997	0.57%	2.232	1.49%	2.026	5.86%	2.633	0.49%	1.335	19.19%	?
Jun-1997	1.28%	2.260	1.54%	2.058	4.35%	2.747	0.37%	1.340	21.53%	?
Jul-1997	0.68%	2.276	2.17%	2.102	7.81%	2.962	0.43%	1.346	21.48%	?
Aug-1997	0.28%	2.282	0.21%	2.107	(5.74%)	2.791	0.41%	1.351	24.76%	?
Sep-1997	2.32%	2.335	2.18%	2.153	5.32%	2.940	0.44%	1.357	22.91%	?
Oct-1997	0.49%	2.347	1.36%	2.182	(3.45%)	2.838	0.42%	1.363	35.09%	?
Nov-1997	1.49%	2.382	0.53%	2.193	4.46%	2.965	0.39%	1.368	27.43%	?
Dec-1997	0.36%	2.390	0.67%	2.208	1.57%	3.012	0.48%	1.375	24.01%	?
Jan-1998	0.85%	2.410	0.54%	2.220	1.02%	3.042	0.43%	1.381	21.47%	?
Feb-1998	1.23%	2.440	0.76%	2.237	7.04%	3.256	0.39%	1.386	18.55%	?
Mar-1998	1.68%	2.481	1.26%	2.265	4.99%	3.419	0.39%	1.391	24.22%	?
Apr-1998	0.36%	2.490	0.66%	2.280	0.91%	3.450	0.43%	1.397	21.18%	?
May-1998	1.69%	2.532	0.48%	2.291	(1.88%)	3.385	0.40%	1.403	21.32%	?
Jun-1998	1.22%	2.563	1.69%	2.330	3.94%	3.519	0.41%	1.409	19.71%	?
Jul-1998	0.76%	2.582	(0.27%)	2.324	(1.16%)	3.478	0.40%	1.414	24.80%	?
Aug-1998	0.21%	2.588	(1.67%)	2.285	(14.58%)	2.971	0.43%	1.420	44.28%	?
Sep-1998	0.98%	2.613	0.81%	2.303	6.24%	3.156	0.46%	1.427	40.95%	?

Exhibit 3 (continued)

Monthly Historical Data, November 1990 to December 2007

Oct-1998	1.86%	2.662	(0.61%)	2.289	8.03%	3.410	0.32%	1.431	28.05%	?
Nov-1998	0.78%	2.683	0.85%	2.309	5.91%	3.611	0.31%	1.436	26.01%	?
Dec-1998	0.26%	2.690	3.59%	2.391	5.64%	3.815	0.38%	1.441	24.42%	?
Jan-1999	1.99%	2.743	0.15%	2.395	4.10%	3.971	0.35%	1.446	26.25%	?
Feb-1999	0.11%	2.746	(1.33%)	2.363	(3.23%)	3.843	0.35%	1.451	27.88%	?
Mar-1999	2.22%	2.807	(0.76%)	2.345	3.88%	3.992	0.43%	1.458	23.26%	?
Apr-1999	0.29%	2.815	(0.65%)	2.330	3.79%	4.144	0.37%	1.463	25.07%	?
May-1999	1.45%	2.856	0.17%	2.334	(2.50%)	4.040	0.34%	1.468	25.39%	?
Jun-1999	1.70%	2.905	2.02%	2.381	5.44%	4.260	0.40%	1.474	21.09%	?
Jul-1999	0.36%	2.915	1.91%	2.427	(3.20%)	4.124	0.38%	1.480	24.64%	?
Aug-1999	0.87%	2.940	0.70%	2.444	(0.63%)	4.098	0.39%	1.485	24.45%	?
Sep-1999	0.66%	2.960	0.85%	2.464	(2.86%)	3.981	0.39%	1.491	25.41%	?
Oct-1999	1.05%	2.991	0.44%	2.475	6.25%	4.230	0.39%	1.497	22.20%	?
Nov-1999	1.54%	3.037	1.05%	2.501	1.91%	4.310	0.36%	1.502	24.18%	?
Dec-1999	0.32%	3.047	2.39%	2.561	5.78%	4.560	0.44%	1.509	23.40%	?
Jan-2000	2.14%	3.112	(1.19%)	2.531	(5.09%)	4.328	0.41%	1.515	24.95%	?
Feb-2000	0.13%	3.116	2.26%	2.588	(2.01%)	4.241	0.43%	1.522	23.37%	?
Mar-2000	1.77%	3.171	0.48%	2.600	9.67%	4.651	0.47%	1.529	23.67%	?
Apr-2000	0.27%	3.180	2.64%	2.669	(3.08%)	4.507	0.46%	1.536	26.20%	?
May-2000	1.30%	3.221	0.27%	2.676	(2.19%)	4.409	0.50%	1.543	23.65%	?
Jun-2000	0.73%	3.245	1.50%	2.716	2.39%	4.514	0.40%	1.550	19.54%	?
Jul-2000	0.58%	3.263	(0.04%)	2.715	(1.63%)	4.440	0.48%	1.557	20.74%	?
Aug-2000	1.26%	3.304	3.06%	2.798	6.07%	4.710	0.50%	1.565	16.84%	?
Sep-2000	0.18%	3.310	0.94%	2.824	(5.35%)	4.458	0.51%	1.573	20.57%	?
Oct-2000	0.86%	3.339	0.23%	2.831	(0.50%)	4.436	0.56%	1.582	23.63%	?
Nov-2000	0.62%	3.360	1.03%	2.860	(8.01%)	4.081	0.51%	1.590	29.65%	?
Dec-2000	0.36%	3.372	2.58%	2.934	0.41%	4.097	0.50%	1.598	26.85%	?
Jan-2001	2.14%	3.444	(1.57%)	2.888	3.46%	4.239	0.54%	1.606	22.02%	?
Feb-2001	0.08%	3.447	2.07%	2.948	(9.23%)	3.848	0.39%	1.613	28.35%	?
Mar-2001	1.07%	3.483	1.77%	3.000	(6.42%)	3.601	0.44%	1.620	28.64%	?
Apr-2001	1.26%	3.527	0.06%	3.002	7.68%	3.878	0.39%	1.626	25.48%	?
May-2001	0.26%	3.536	0.28%	3.010	0.51%	3.897	0.32%	1.631	22.64%	?
Jun-2001	0.17%	3.543	0.36%	3.021	(2.50%)	3.800	0.28%	1.636	19.06%	?
Jul-2001	0.38%	3.556	0.45%	3.034	(1.08%)	3.759	0.30%	1.641	21.62%	?

Exhibit 3 (continued)

Monthly Historical Data, November 1990 to December 2007

Aug-2001	0.94%	3.589	1.73%	3.087	(6.41%)	3.518	0.31%	1.646	24.92%	?
Sep-2001	0.66%	3.613	1.31%	3.127	(8.17%)	3.230	0.28%	1.650	31.93%	?
Oct-2001	1.22%	3.657	0.01%	3.128	1.81%	3.289	0.22%	1.654	33.56%	?
Nov-2001	1.14%	3.699	(0.36%)	3.116	7.52%	3.536	0.17%	1.657	24.92%	?
Dec-2001	0.12%	3.703	0.46%	3.131	0.76%	3.563	0.15%	1.659	23.80%	?
Jan-2002	(0.04%)	3.702	0.76%	3.155	(1.56%)	3.507	0.14%	1.662	21.09%	?
Feb-2002	0.53%	3.721	(0.22%)	3.148	(2.08%)	3.435	0.13%	1.664	21.59%	?
Mar-2002	0.39%	3.736	0.06%	3.149	3.67%	3.561	0.13%	1.666	17.40%	?
Apr-2002	1.09%	3.777	0.99%	3.180	(6.14%)	3.342	0.15%	1.668	21.91%	?
May-2002	2.05%	3.854	0.03%	3.181	(0.91%)	3.312	0.14%	1.671	19.98%	?
Jun-2002	0.19%	3.861	0.05%	3.183	(7.25%)	3.072	0.13%	1.673	25.40%	?
Jul-2002	3.29%	3.988	(0.27%)	3.174	(7.90%)	2.829	0.15%	1.675	32.03%	?
Aug-2002	(0.13%)	3.983	0.53%	3.191	0.49%	2.843	0.14%	1.678	32.64%	?
Sep-2002	0.06%	3.986	(0.25%)	3.184	(11.00%)	2.530	0.14%	1.680	39.69%	?
Oct-2002	0.66%	4.012	(0.29%)	3.174	8.64%	2.749	0.14%	1.682	31.14%	?
Nov-2002	0.09%	4.016	(0.91%)	3.145	5.71%	2.906	0.12%	1.685	27.50%	?
Dec-2002	0.00%	4.016	0.51%	3.161	(6.03%)	2.730	0.11%	1.686	28.62%	?
Jan-2003	(0.35%)	4.002	0.30%	3.171	(2.74%)	2.656	0.10%	1.688	31.17%	?
Feb-2003	(0.05%)	4.000	(0.18%)	3.165	(1.70%)	2.610	0.09%	1.690	29.63%	?
Mar-2003	1.85%	4.074	(0.05%)	3.163	0.84%	2.632	0.10%	1.691	29.15%	?
Apr-2003	0.03%	4.075	0.36%	3.175	8.10%	2.846	0.10%	1.693	21.21%	?
May-2003	0.90%	4.111	0.35%	3.186	5.09%	2.990	0.09%	1.694	19.47%	?
Jun-2003	0.93%	4.150	0.40%	3.199	1.13%	3.024	0.10%	1.696	19.52%	?
Jul-2003	1.37%	4.206	(0.44%)	3.185	1.62%	3.073	0.07%	1.697	19.49%	?
Aug-2003	0.16%	4.213	0.13%	3.189	1.79%	3.128	0.07%	1.699	18.63%	?
Sep-2003	0.86%	4.249	0.60%	3.208	(1.19%)	3.091	0.08%	1.700	22.72%	?
Oct-2003	1.26%	4.303	1.06%	3.242	5.50%	3.261	0.07%	1.701	16.10%	?
Nov-2003	(0.14%)	4.297	0.20%	3.248	0.71%	3.284	0.07%	1.702	16.32%	?
Dec-2003	0.25%	4.308	(0.29%)	3.239	5.08%	3.451	0.08%	1.704	18.31%	?
Jan-2004	0.88%	4.346	1.07%	3.273	1.73%	3.510	0.07%	1.705	16.63%	?
Feb-2004	0.44%	4.365	0.57%	3.292	1.22%	3.553	0.06%	1.706	14.55%	?
Mar-2004	(0.01%)	4.364	0.41%	3.305	(1.64%)	3.495	0.09%	1.707	16.74%	?
Apr-2004	0.37%	4.380	(1.15%)	3.267	(1.68%)	3.436	0.08%	1.709	17.19%	?
May-2004	0.59%	4.406	0.35%	3.279	1.21%	3.478	0.06%	1.710	15.50%	?

Exhibit 3 (continued)

Monthly Historical Data, November 1990 to December 2007

Jun-2004	1.21%	4.460	0.38%	3.291	1.80%	3.540	0.08%	1.711	14.34%	?
Jul-2004	0.02%	4.461	0.18%	3.297	(3.43%)	3.419	0.10%	1.713	15.32%	?
Aug-2004	1.26%	4.517	(0.23%)	3.290	0.23%	3.427	0.11%	1.715	15.29%	?
Sep-2004	0.46%	4.537	0.79%	3.316	0.94%	3.459	0.11%	1.717	13.34%	?
Oct-2004	0.03%	4.539	(0.01%)	3.315	1.40%	3.507	0.11%	1.719	16.27%	?
Nov-2004	0.79%	4.575	1.31%	3.359	3.86%	3.643	0.15%	1.721	13.24%	?
Dec-2004	0.24%	4.586	0.43%	3.373	3.25%	3.761	0.16%	1.724	13.29%	?
Jan-2005	0.51%	4.609	0.64%	3.394	(2.53%)	3.666	0.16%	1.727	12.82%	?
Feb-2005	0.37%	4.626	1.16%	3.434	1.89%	3.735	0.16%	1.729	12.08%	?
Mar-2005	0.85%	4.665	0.10%	3.437	(1.91%)	3.664	0.21%	1.733	14.02%	?
Apr-2005	0.14%	4.672	(0.38%)	3.424	(2.01%)	3.590	0.21%	1.737	15.31%	?
May-2005	0.63%	4.701	0.58%	3.444	3.00%	3.698	0.24%	1.741	13.29%	?
Jun-2005	0.46%	4.723	0.84%	3.473	(0.01%)	3.697	0.23%	1.745	12.04%	?
Jul-2005	0.13%	4.729	0.82%	3.501	3.60%	3.830	0.24%	1.749	11.57%	?
Aug-2005	0.16%	4.737	0.56%	3.521	(1.12%)	3.787	0.30%	1.754	12.60%	?
Sep-2005	0.89%	4.779	0.95%	3.554	0.69%	3.813	0.29%	1.759	11.92%	?
Oct-2005	1.61%	4.856	(0.30%)	3.544	(1.77%)	3.746	0.27%	1.764	15.32%	?
Nov-2005	0.75%	4.892	0.56%	3.564	3.52%	3.878	0.31%	1.770	12.06%	?
Dec-2005	0.54%	4.919	0.54%	3.583	(0.10%)	3.874	0.32%	1.775	12.07%	?
Jan-2006	0.70%	4.953	1.45%	3.635	2.55%	3.973	0.35%	1.781	12.95%	?
Feb-2006	0.20%	4.963	0.27%	3.645	0.05%	3.974	0.34%	1.787	12.34%	?
Mar-2006	1.31%	5.028	0.91%	3.678	1.74%	4.043	0.37%	1.794	11.39%	?
Apr-2006	0.94%	5.075	1.29%	3.726	0.59%	4.067	0.36%	1.801	11.59%	?
May-2006	0.70%	5.111	(0.07%)	3.723	(3.09%)	3.941	0.43%	1.808	16.44%	?
Jun-2006	0.51%	5.137	0.63%	3.746	0.00%	3.941	0.40%	1.816	13.08%	?
Jul-2006	1.06%	5.191	0.36%	3.760	0.67%	3.968	0.40%	1.823	14.95%	?
Aug-2006	0.77%	5.231	0.06%	3.762	1.98%	4.046	0.42%	1.830	12.31%	?
Sep-2006	0.68%	5.267	0.21%	3.770	2.46%	4.146	0.41%	1.838	11.98%	?
Oct-2006	0.42%	5.289	0.67%	3.795	3.14%	4.276	0.41%	1.845	11.10%	?
Nov-2006	0.86%	5.334	0.48%	3.814	1.66%	4.347	0.42%	1.853	10.91%	?
Dec-2006	0.86%	5.380	0.82%	3.845	1.24%	4.401	0.40%	1.861	11.56%	?
Jan-2007	0.29%	5.396	0.84%	3.878	1.40%	4.462	0.44%	1.869	10.42%	?
Feb-2007	(0.11%)	5.390	0.23%	3.887	(2.16%)	4.366	0.38%	1.876	15.42%	?

Exhibit 3 (continued)

Monthly Historical Data, November 1990 to December 2007

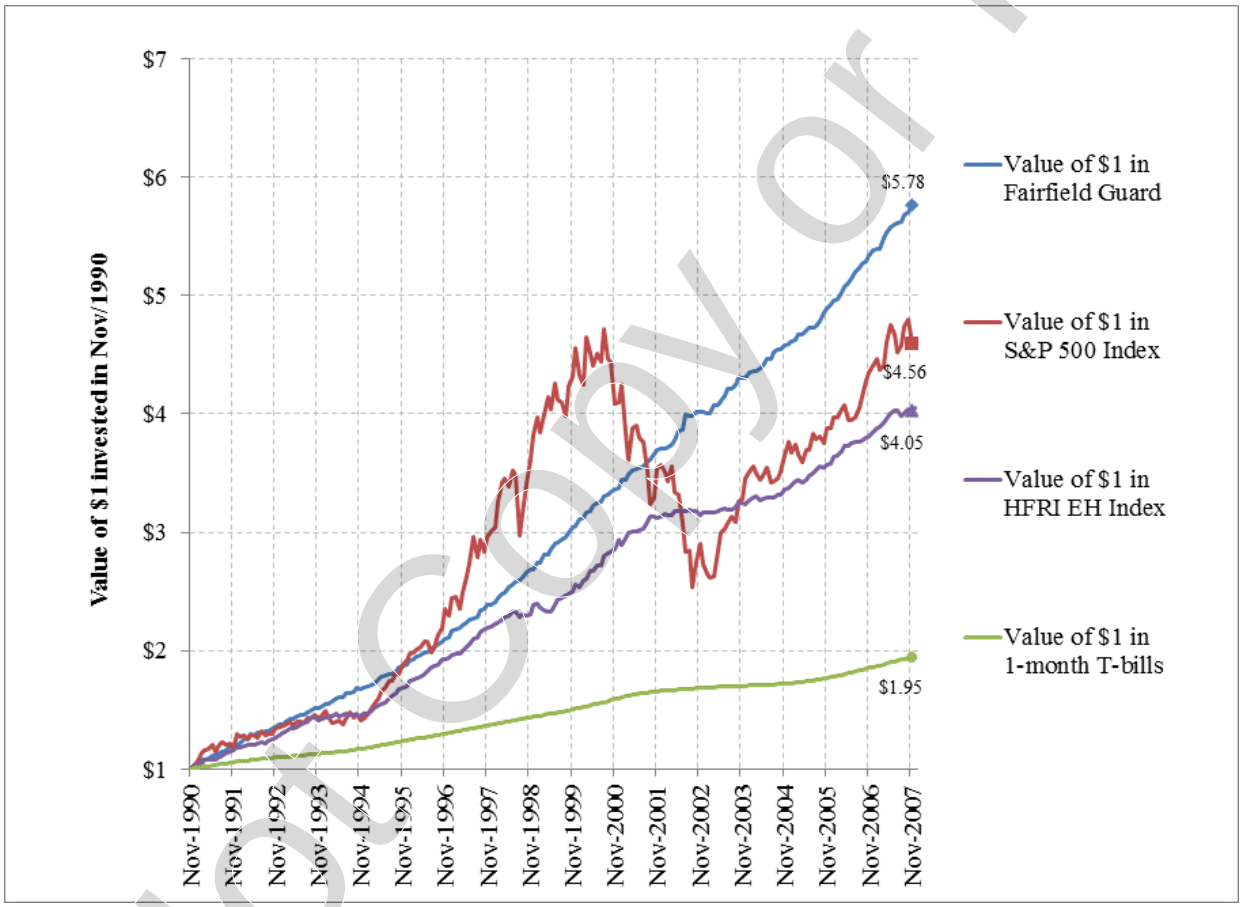
Mar-2007	1.64%	5.478	0.92%	3.922	1.00%	4.409	0.43%	1.884	14.64%	?
Apr-2007	0.98%	5.532	0.77%	3.952	4.33%	4.600	0.44%	1.892	14.22%	?
May-2007	0.81%	5.577	1.26%	4.002	3.25%	4.750	0.41%	1.900	13.05%	?
Jun-2007	0.34%	5.596	0.71%	4.031	(1.70%)	4.670	0.40%	1.908	16.23%	?
Jul-2007	0.17%	5.605	(0.05%)	4.029	(3.29%)	4.516	0.40%	1.915	23.52%	?
Aug-2007	0.31%	5.623	(1.26%)	3.978	1.29%	4.574	0.42%	1.923	23.38%	?
Sep-2007	0.97%	5.677	0.72%	4.007	3.62%	4.740	0.32%	1.929	18.00%	?
Oct-2007	0.46%	5.703	0.90%	4.043	1.21%	4.797	0.32%	1.936	18.53%	?
Nov-2007	1.04%	5.763	(0.30%)	4.031	(4.28%)	4.592	0.34%	1.942	22.87%	?
Dec-2007	0.23%	5.776	0.45%	4.049	(0.79%)	4.556	0.27%	1.947	22.50%	?

Source: The accumulated value of $1 at month-ends are calculated using monthly returns. Fairfield Guard returns are from **Exhibit 1**. HFRI Equity Market Neutral Index monthly returns are from Bloomberg (HFRIEMNI <Index>). Standard & Poors (S&P) 500 Index monthly returns are from Yahoo Finance (http://finance.yahoo.com/q?s=%5EGSPC) and assume reinvestment of dividends. One-month Treasury bills monthly returns are from Ibbotson and Associates (available from Professor Ken French's website at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). The Implied Volatility of the S&P 500 Index is from the level of VIX trading at the Chicago Board Options Exchange.

Exhibit 4

HEDGE FUND DUE DILIGENCE AT LEMAN ALTERNATIVE ASSET MANAGEMENT COMPANY

Growth in Value of $1 Invested from November 30, 1990, to December 31, 2007 (Monthly)



Source: Case writer calculations.