

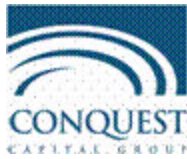


# Does a Change in Risk Regime Spell Trouble for Hedge Funds?<sup>1</sup>

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<sup>1</sup>The authors of this paper are principals and employees of Conquest Capital Group LLC. Conquest and its affiliates manage \$380 million in an array of products comprised of systematic CTA alpha and beta products, a diversified multi-strategy fund, and a discretionary volatility arbitrage fund. Conquest principals collectively have over 30 years of trading experience building and managing trading businesses of some of the world's premier investment firms. For further information regarding Conquest Capital Group LLC, please refer to the Conquest website at <http://www.conquestcg.com>

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## Abstract

The risk-adjusted returns since inception of most hedge fund indices have been enhanced by a favorable environment and could be susceptible to a decrease in market risk appetite. However, this vulnerability is not uniform; managed futures strategies have proven more robust than other hedge fund strategies, yielding positive returns under both risk-seeking and risk-averse conditions.

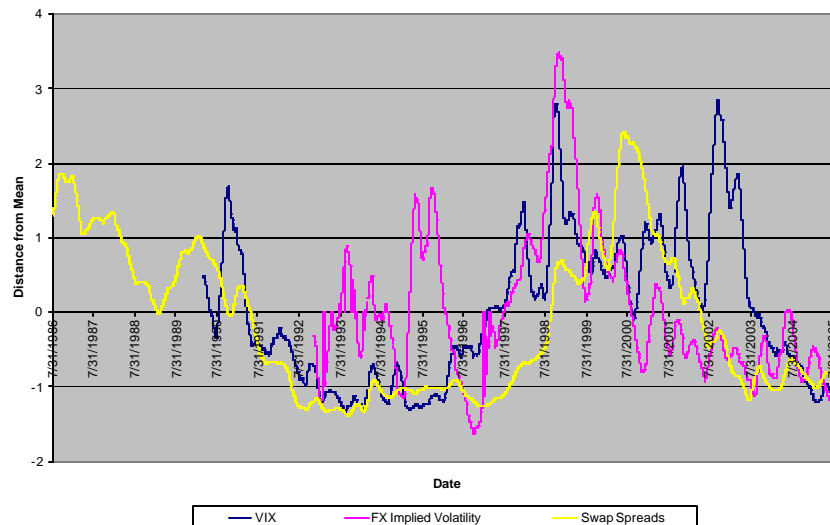
Risk-averse periods tend to cluster and therefore the current state of market risk appetite provides information about the future state of market risk appetite. These effects in combination mean that it is possible to enhance portfolio performance by combining a measure of risk aversion with allocations to the managed futures space.

## Explaining Recent Hedge Fund Returns

The recent development of a number of daily, sector-specific hedge fund indices, most notably those created by HFR and Standard and Poor's, has dramatically increased the granularity with which the hedge fund space can be analyzed. These indices paint a rosy picture of hedge fund behavior, with the vast majority of these indices exhibiting positive returns.

However, nearly all of these indices do not report returns before October, 2002. Consequently, these returns could be more indicative of a favorable environment than of the long-term strength of a particular class of strategies. In particular, the declining risk premia of the past few years, evidenced in the form of tighter spreads and cheaper options (see Figure 1), suggest that there might be a relationship between market risk tolerance and hedge fund performance.

Figure 1: Risk Premia Have Steadily Fallen Well Below Their Norms





## Measuring Risk Appetite: The Conquest Risk Aversion Index

Market risk appetite can be measured by the level of compensation market participants require in order to assume risk. We identified five prominent characteristics of risk-averse market environments and selected metrics for each risk factor:

### 1. **Reduced Liquidity – Swap Spreads**

Wider swap spreads indicate a “flight to quality,” wherein the most liquid and creditworthy securities witness a relative increase in value due to increased demand.

### 2. **Increased Credit Risk – Corporate Bond Spreads**

Domestic credit spreads reflect the market’s appetite for riskier corporate debt as compared to “risk-free” government debt. Wider spreads indicate that investors are less willing to assume default risk.

### 3. **Increased Emerging Market Event Risk – Emerging Market Bond Spreads**

Whereas domestic credit spreads reflect risk premia for lesser-quality domestic debt, emerging market credit spreads reflect investors’ willingness to assume the risk of default or reduced stability in more speculative regions of the world.

### 4. **FX Volatility – FX Implied Volatility**

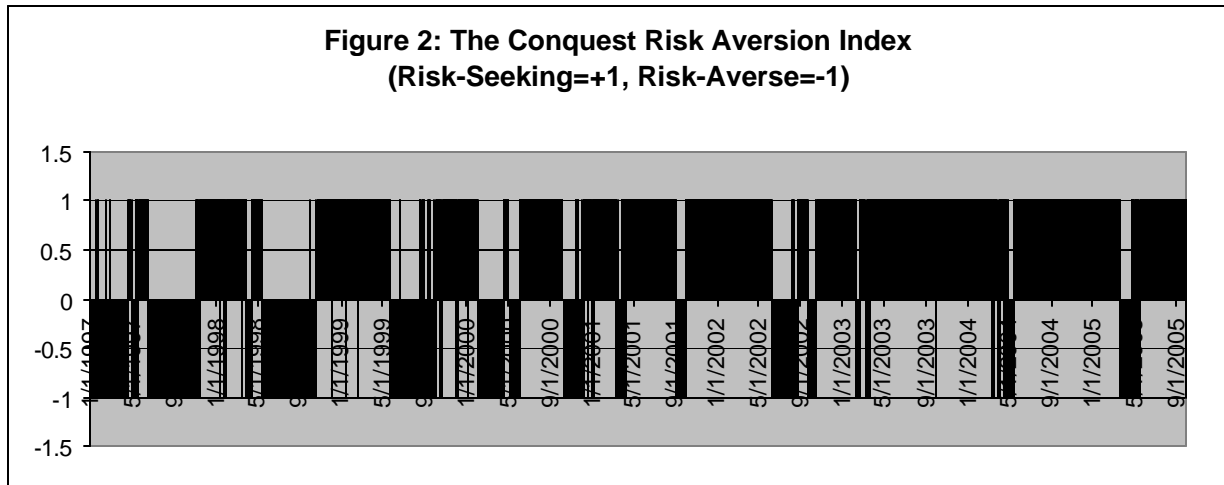
FX Implied Volatility is used to gauge confidence in exchange rate expectations. The demand for greater compensation by option writers indicates a lessened willingness to assume exchange rate risk.

### 5. **Equity Volatility – VIX**

Domestic equity volatility is similarly indicative of option writers’ confidence in the level of valuation of the equity of domestic corporations.

We calculate a risk aversion score for each indicator based on its level relative to that specific indicator’s recent history. If an indicator is above a certain threshold it is considered to be in risk-averse mode.

The Conquest Risk Aversion index is a composite based on the status of all five indicators, which indicates whether the global environment is risk-averse or risk-seeking. The index itself is binary: if *at least two* indicators are risk-averse, the index deems the prevailing environment risk-averse. Otherwise, the risk regime is considered risk-seeking. The historic levels of the Conquest Risk Aversion Index are shown in Figure 2.



**Risk Appetite Has Been Well Above Average over the Past Few Years**

Figure 2 suggests that the market generally is in risk-seeking mode. The descriptive data, shown in Figure 3, confirms this assessment. However, Figure 2 also indicates that the levels of the index have diverged significantly from their historical norms. Examining the Conquest Risk Aversion Index since October 2002, we see that 75 of the 745 days, or roughly 10%, have been categorized as risk-averse. This frequency is well below the 30% average we have seen since index inception.

**Figure 3: Recent Levels of the Conquest Risk Aversion Index vs. Its Historical Performance  
From January 1997 to September 14, 2005**

	Since Index Inception	Inception to September 30, 2002	October 1, 2002 to September 14, 2005	Recent Level vs. Historical
Total Days	2264	1519	745	
Regime Changes/Year	14.1	16.2	9.8	<b>FEWER</b>
Risk-Averse Days	700	625	75	
<b>Percent Risk-Averse</b>	<b>30.9%</b>	<b>41.1%</b>	<b>10.1%</b>	<b>LOWER</b>
Average RA Run Length	11.5	13.4	7.6	<b>SHORTER</b>

Volatility and spreads have historically been cyclical, as is apparent from Figure 1. Thus, we would generally expect that a period of risk-seeking with below average volatility and spreads will eventually be succeeded by a period of risk aversion with above average volatility and spreads. As Figure 1 shows, we are currently in a period with below average volatility and spreads.

We also see that these risk-averse runs have been shorter and less frequent and that both the length and frequency of the runs have decreased in roughly equal measures. This uniformity suggests that the run-like nature of risk-averse periods has not changed regardless of their thinner density. That the risk-averse periods exhibit similar characteristics further suggests that although



these levels represent an extreme, they are well within the expected behavior of the index and not the result of a cataclysmic market dislocation.

### **Examining Historical Performance across the Hedge Fund Space**

We analyzed the risk-adjusted performance of twenty-one of S&P's and HFR's daily indices under different market risk regimes. The key metric by which we evaluated the indices was the Information Ratio, which is simply the annualized return divided by the annualized volatility.

We used the Information Ratio as our basis for comparison because its calculation is dependent only on the performance of the asset; it is insensitive to external factors such as risk-free rates of return. This insensitivity was essential because different hedge fund sectors have different volatilities and rates of return. Consequently, adding other variables could have skewed the results.

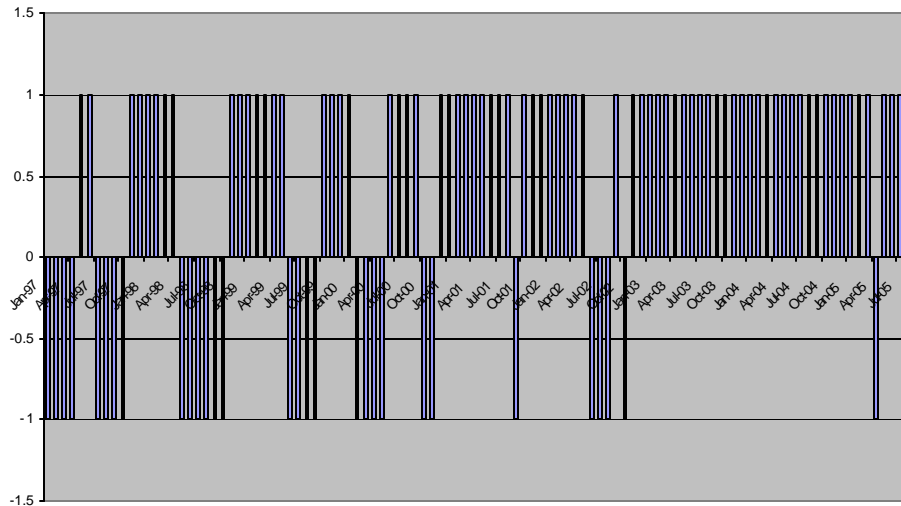
Our findings were unambiguous; **20 of the 21 indices performed significantly better under risk-seeking regimes.** In fact, the only index that performed better in risk-averse regimes has exhibited negative returns since inception. These results are documented in Appendices 1 and 2.

Our results suggest that the high level of risk appetite witnessed over the past few years may explain why hedge fund strategies have performed better over the past few years than might be expected under more representative conditions. We therefore sought to reexamine the space's returns over the life of our risk aversion index. Given the relatively short history of daily indices, we were forced to turn to monthly indices to test this hypothesis. Utilizing monthly indices also has the advantage of more accurately representing a minimal investment horizon.

To transform the Conquest Risk Aversion Index into a monthly indicator, we defined a month as risk-averse if more than half of the days were risk-averse. We found the frequency of risk-averse months to be quite similar to that of risk-averse days; 30 out of the 104 months (28.8%) were categorized as risk-averse, whereas 30.9% of the days were similarly categorized. The monthly index is shown in Figure 4.



**Figure 4: Conquest Monthly Risk Aversion Index  
(Risk-Seeking =1, Risk-Averse =-1)**



Having devised a monthly index, we segregated the performance of each index by risk appetite regime much as we had done with the daily indices. The results are shown in Appendix 3. Our findings were conclusive. The hedge fund space as a whole, represented by the CSFB/Tremont Hedge Fund Index, performed **significantly** better under risk-seeking regimes than under risk-averse regimes. In fact, the index barely broke even in risk-averse regimes. Similarly, every hedge fund index performed markedly better under risk-seeking regimes with two exceptions: the CSFB/Tremont Dedicated Short Index and **all** managed futures indices exhibited stronger performance under risk-averse regimes.

That the CSFB/Tremont Dedicated Short Index performed better in risk-averse regimes is not surprising as the components of that index are designed to have negative correlations to the long equity exposure embedded in many other hedge fund products. Furthermore, a consequence of this negative correlation is that the Dedicated Short Index was the only index with a negative Information Ratio overall.

The stronger performance of the managed futures space in risk-averse periods seemed slightly counter-intuitive because the managed futures space is almost entirely comprised of longer-term trend-following strategies. It might logically be surmised that longer-term trend-following strategies would do better in risk-seeking periods because these periods are more frequent and longer lasting. However, the improvement in performance between risk-seeking and risk-averse regimes was practically uniform across the space. Specifically, the Barclay BTOP50 Index and the CSFB/Tremont Managed Futures index both show virtually identical differences in performance between the two regimes, as both indices exhibited an Information Ratio spread between risk appetite regimes of roughly 1.08.



## Examining Trend-Following Performance Using Conquest Managed Futures Select

The opaqueness of proprietary managers limits the ability to analyze index returns with sufficient detail to determine which aspects of the strategies are profitable. However, Conquest Managed Futures Select, our proxy for the managed futures space, boasts a roughly 90% correlation to the S&P Managed Futures Index and an 85% correlation to the Calyon Financial Barclay Index. Moreover, as depicted in Figure 5, MFS's response to market risk appetite is strikingly similar when analyzed over daily returns. Thus, we can analyze MFS in more detail and draw conclusions applicable to the managed futures space as a whole.

**Figure 5: Comparison of MFS and Indices Vs Conquest Risk Aversion Index Actual Performance**

Since January 3, 2000					
Conquest Managed Futures Select	Total P/L	# of days	Average Daily P/L	SD of Daily Returns	Information Ratio
Risk-Averse	-0.09%	283	0.000%	1.151%	0.00
Risk-Seeking	51.37%	1199	0.043%	0.780%	0.89
Aggregate	51.27%	1482	0.035%	0.863%	0.65

Calyon-Barclay Managed Futures Index					
	Total P/L	# of days	Average Daily P/L	SD of Daily Returns	Information Ratio
Risk-Averse	-0.28%	283	-0.001%	0.752%	-0.02
Risk-Seeking	43.48%	1203	0.036%	0.545%	1.07
Aggregate	43.20%	1486	0.029%	0.590%	0.79

Since January 3, 2003					
Conquest Managed Futures Select	Total P/L	# of days	Average Daily P/L	SD of Daily Returns	Information Ratio
Risk-Averse	-13.10%	62	-0.211%	0.979%	-3.48
Risk-Seeking	26.39%	618	0.043%	0.762%	0.90
Aggregate	13.29%	680	0.020%	0.861%	0.37

Standard & Poor's Managed Futures Index					
	Total P/L	# of days	Average Daily P/L	SD of Daily Returns	Information Ratio
Risk-Averse	-14.01%	62	-0.226%	1.094%	-3.33
Risk-Seeking	21.72%	618	0.035%	1.029%	0.55
Aggregate	7.72%	680	0.011%	1.037%	0.18

\*Information ratio is defined as total annualized p/l divided by standard deviation of annualized returns (Sharpe ratio without risk-free rate)

Comparing MFS to the CSFB/Tremont Managed Futures Index and the BTOP50 Index produced similar results; MFS has exhibited a roughly 86% monthly correlation to each of these indices since 1997. We then separated the

MFS monthly returns in the same manner as we had the returns of the BTOP50 and Tremont indices. The partitioned returns are shown in Figure 6. The results were quite striking; not only did MFS performance improve markedly under risk-averse regimes, but the performance improvement, as measured by Information Ratio, was *virtually identical in magnitude*. We also see that MFS outperformed both of

**Figure 6: Analysis of MFS Performance Versus Other Managed Futures Indices Monthly Returns from January 1997 to August 2005**

Conquest Managed Futures Select						
	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	Information Ratio Spread
Averse	65.30%	30	2.18%	4.56%	1.65	1.09
Seeking	47.61%	74	0.64%	3.98%	0.56	
Aggregate	112.91%	104	1.09%	4.21%	0.89	

BTop 50 Managed Futures Index						
	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	Information Ratio Spread
Averse	38.48%	30	1.28%	2.92%	1.52	1.07
Seeking	27.80%	74	0.38%	2.87%	0.45	
Aggregate	66.28%	104	0.64%	2.90%	0.76	

CSFB/Tremont Managed Futures Index						
	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	Information Ratio Spread
Averse	45.77%	30	1.53%	3.92%	1.35	1.08
Seeking	18.79%	74	0.25%	3.31%	0.27	
Aggregate	64.56%	104	0.62%	3.54%	0.61	

these indices by non-negligible margins.

### Short-term Systems are the Most Robust under the Daily Microscope

The variable nature of market risk tolerance suggested to us that trade horizon might have a strong relationship to return robustness. In particular, we theorized that strategies focused on shorter time horizons might be better able to cope with change in risk regimes.

We further analyzed MFS's performance by time horizon. This more granular examination, the results of which are shown in Figure 7, illustrates the importance of both trade horizon and observation period in evaluating performance.



**Figure 7: MFS Performance Versus Conquest Risk Aversion Index Segregated By Trade Horizon Since January 1997**

**Daily Returns from January, 1997 to September 14, 2005**

Conquest Managed Futures Select	Total Return	# of Days	Average Return	SD of Daily Returns	Information Ratio
Risk-Averse	26.63%	700	0.038%	1.091%	0.56
Risk-Seeking	82.44%	1564	0.053%	0.762%	1.12
Aggregate	109.07%	2264	0.048%	0.876%	0.89

MFS Short-Horizon Systems (< 20 Days)	Total Return	# of Days	Average Return	SD of Daily Returns	Information Ratio
Risk-Averse	20.10%	700	0.029%	0.416%	1.11
Risk-Seeking	7.37%	1564	0.005%	0.321%	0.24
Aggregate	27.48%	2264	0.012%	0.416%	0.47

MFS Medium-Horizon Systems (20-60 Days)	Total Return	# of Days	Average Return	SD of Daily Returns	Information Ratio
Risk-Averse	2.75%	700	0.004%	0.368%	0.17
Risk-Seeking	21.88%	1564	0.014%	0.254%	0.89
Aggregate	24.63%	2264	0.011%	0.294%	0.60

MFS Long-Horizon System (> 60 Days)	Total Return	# of Days	Average Return	SD of Daily Returns	Information Ratio
Risk-Averse	3.61%	700	0.005%	0.445%	0.19
Risk-Seeking	53.38%	1564	0.034%	0.376%	1.47
Aggregate	57.00%	2264	0.025%	0.398%	1.02

**Monthly Returns from January 1997 to August 2005**

Conquest Managed Futures Select	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio
Risk-Averse	65.30%	30	2.177%	4.563%	1.65
Risk-Seeking	47.61%	74	0.643%	3.982%	0.56
Aggregate	112.91%	104	1.086%	4.207%	0.89

MFS Short-Horizon Systems (< 20 Days)	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio
Risk-Averse	23.04%	30	0.768%	1.965%	1.35
Risk-Seeking	5.90%	74	0.080%	1.534%	0.18
Aggregate	28.94%	104	0.278%	1.704%	0.57

MFS Medium-Horizon Systems (20-60 Days)	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio
Risk-Averse	18.71%	30	0.624%	1.445%	1.49
Risk-Seeking	6.82%	74	0.092%	1.299%	0.25
Aggregate	25.53%	104	0.245%	1.360%	0.63

MFS Long-Horizon System (> 60 Days)	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio
Risk-Averse	23.39%	30	0.780%	1.836%	1.47
Risk-Seeking	35.09%	74	0.474%	1.924%	0.85
Aggregate	58.48%	104	0.562%	1.901%	1.02

\*Information ratio is defined as total annualized p/l divided by standard deviation of annualized returns (Sharpe ratio without risk-free rate)

Although long-term trend followers performed better under risk-averse regimes when evaluated on a monthly basis, our analysis of MFS using the daily version of the Conquest Risk Aversion Index painted an entirely different picture. As documented in Figure 5, long-term trend followers performed *dramatically* better under risk-seeking regimes, either losing money or barely breaking even on risk-averse trading days. Our daily analysis of MFS reiterates this return distribution.

We examined the source of this change in return character by separating MFS returns not only by risk regime but also by trade horizon. Using a daily evaluation period rather than monthly, we find that only the short-term basket exhibited significantly better performance under risk-averse regimes than under risk-seeking regimes. In contrast, the medium and long-term systems performed dramatically better during risk-seeking regimes. This disparity is consistent with our analysis of the S&P Managed Futures Index (see Appendix 1).

These results stand in sharp contrast to the results of the analysis using monthly observations, wherein managed futures strategies performed well regardless of trade horizon. However, this discrepancy is not shocking; periods of risk aversion tend to be shorter on average than risk-seeking periods. Consequently, longer-horizon systems are more likely to absorb short-term counter-trend movements without reversing their positions.

## Trading Strategies that Capitalize on the Conquest Risk Aversion Index

### Strategy 1: Optimizing Portfolio Performance by Incorporating Managed Futures Strategies

There is a significant body of literature suggesting that adding managed futures to both hedge fund and general portfolios improves performance (see Appendix 5). We tested this assertion by running two-security optimizations in which the CSFB/Tremont Hedge Fund Index was paired



with two popular trend-following indices, as well as Conquest Managed Futures Select. The optimized portfolios are shown in Figure 8, with risk appetite determined on a monthly basis.

**Figure 8: Optimized Portfolios Blending Managed Futures with CSFB/Tremont Hedge Fund Index (Static Allocation)**  
Performance from January 1997 to August 2005

CSFB/Tremont Alone	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	CSFB/Tremont Weight
Risk-Averse	0.67%	30	0.022%	3.095%	0.02	100.0%
Risk-Seeking	85.57%	74	1.156%	1.536%	2.61	100.0%
Aggregate	86.24%	104	0.829%	2.174%	1.32	100.0%

CSFB/Tremont vs. Conquest MFS	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	CSFB/Tremont Weight	Managed Futures Select Weight
Risk-Averse	16.11%	30	0.537%	2.560%	0.73	76.1%	23.9%
Risk-Seeking	76.50%	74	1.034%	1.752%	2.04	76.1%	23.9%
Aggregate	92.61%	104	0.890%	2.035%	1.52	76.1%	23.9%

CSFB/Tremont vs. Tremont Managed Futures	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	CSFB/Tremont Weight	Tremont Managed Futures Weight
Risk-Averse	4.48%	30	0.149%	2.438%	0.21	78.5%	21.5%
Risk-Seeking	77.11%	74	1.042%	1.527%	2.36	78.5%	21.5%
Aggregate	81.56%	104	0.784%	1.882%	1.44	78.5%	21.5%

**Performance from January 2000 to August 2005**

CSFB/Tremont Alone	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	CSFB/Tremont Weight
Risk-Averse	5.24%	12	0.437%	2.928%	0.52	100.0%
Risk-Seeking	35.33%	56	0.631%	0.875%	2.50	100.0%
Aggregate	40.57%	68	0.597%	1.466%	1.41	100.0%

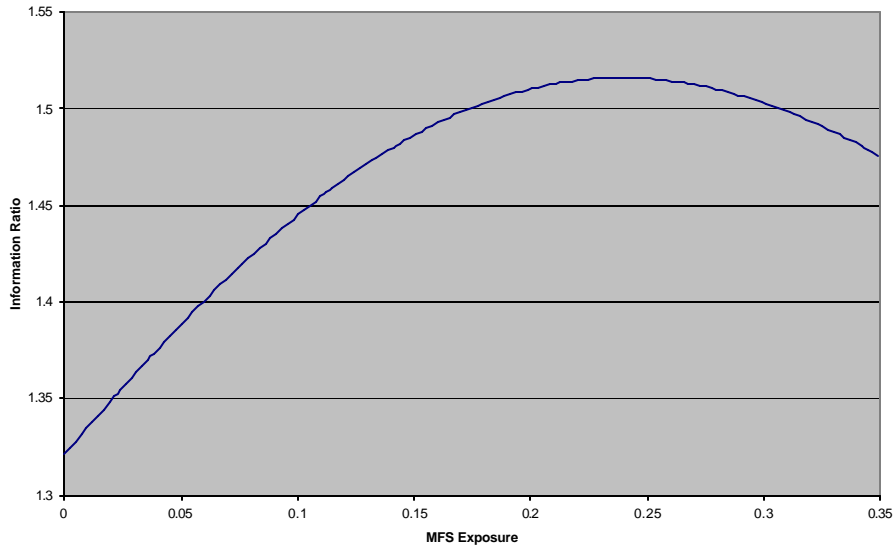
  

CSFB/Tremont vs. Calyon/Barclay	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	CSFB/Tremont Weight	Calyon/Barclay Weight
Risk-Averse	-3.96%	12	-0.330%	2.102%	-0.54	83.5%	16.5%
Risk-Seeking	45.00%	56	0.804%	1.083%	2.57	83.5%	16.5%
Aggregate	41.04%	68	0.604%	1.390%	1.50	83.5%	16.5%

Examining these portfolios, our risk appetite analysis reaffirmed that there are benefits of incorporating managed futures exposure into existing hedge fund portfolios. Specifically, there is strong evidence that rotating 15-24% of the assets into trend-following or managed futures vehicles improves risk-adjusted performance in a non-negligible manner. We further document this effect in Figure 9, which plots performance against managed futures allocation.



Figure 9: Performance as a Function of Managed Futures Exposure



Significantly, Figure 9 illustrates that realizing benefits from managed futures exposure does not entail a massive rotation of assets. **Even a smaller allocation of assets to managed futures would have non-negligibly improved performance.**

### Strategy 2: Entry and Exit Timing Based on the Conquest Risk Aversion Index

The Conquest Risk Aversion Index on the last day of the month can be used to predict risk appetite for the following month, with a high degree of confidence. The risk aversion score of the last day of a month predicted the next month's risk aversion score 86.7% of the time.

Using this predictive method of risk-aversion scoring, we re-evaluated the various CSFB/Tremont indices. Our results, shown in Appendix 4, were quite clear; although the predictive error tended to narrow the spread between performance in different risk regimes, **every index performed better under the same risk regime regardless of whether we evaluated risk aversion using the retrospective or predictive method.** Furthermore, the spread between the risk-averse and risk-seeking Information Ratios of each index remained significant without exception.

After validating our predictor, we determined optimal allocations for each risk regime and re-weighted the portfolio according to the expected risk regime monthly, every month. We optimized both for performance and for minimal risk appetite sensitivity to illustrate the incremental benefits of incorporating these asset classes into a hedge fund portfolio. The performance of these optimal strategies is juxtaposed to the performance of our basic allocation strategy (Strategy 1) in Figure 10.



**Figure 10: Optimized Portfolios Blending Managed Futures with CSFB/Tremont Hedge Fund Index Since January, 1997**

CSFB/Tremont Alone	Total Ret	# of Months	Average	Dev	Information Ratio	CSFB/Tremont Weight	
Risk-Averse	0.67%	30	0.022%	3.095%	0.02	100.0%	
Risk-Seeking	85.57%	74	1.156%	1.536%	2.61	100.0%	
Aggregate	86.24%	104	0.829%	2.174%	1.32	100.0%	

Optimized for Performance (Maximal Information Ratio)							
Allocation Strategy Optimized for Performance						CSFB/Tremont Weight	Managed Futures Select Weight
Performance	Total Ret	# of Months	Average	Dev	Information Ratio	Weight	Weight
Risk-Averse	16.11%	30	0.537%	2.560%	0.73	76.1%	23.9%
Risk-Seeking	76.50%	74	1.034%	1.752%	2.04	76.1%	23.9%
Aggregate	92.61%	104	0.890%	2.035%	1.52	76.1%	23.9%

Predictive Strategy Optimized for Performance							
Performance	Total Ret	# of Months	Average	Dev	Information Ratio	CSFB/Tremont Weight	Managed Futures Select Weight
Risk-Averse	32.37%	29	1.116%	2.876%	1.34	49.5%	50.5%
Risk-Seeking	80.70%	75	1.076%	1.684%	2.21	100.0%	0.0%
Aggregate	113.07%	104	1.087%	2.086%	1.81	85.9%	14.1%

Optimized for Balance (Minimal Spread Between Risk-Averse and Risk-Seeking Information Ratios)							
Allocation Strategy Optimized for Balance						CSFB/Tremont Weight	Managed Futures Select Weight
Balance	Total Ret	# of Months	Average	Dev	Information Ratio	Weight	Weight
Risk-Averse	31.51%	30	1.050%	2.666%	1.36	52.3%	47.7%
Risk-Seeking	67.46%	74	0.912%	2.314%	1.36	52.3%	47.7%
Aggregate	98.97%	104	0.952%	2.421%	1.36	52.3%	47.7%

Predictive Strategy Optimized for Balance							
Balance	Total Ret	# of Months	Average	Dev	Information Ratio	CSFB/Tremont Weight	Managed Futures Select Weight
Risk-Averse	49.15%	29	1.695%	4.007%	1.47	17.9%	82.1%
Risk-Seeking	80.70%	75	1.076%	1.684%	2.21	100.0%	0.0%
Aggregate	129.85%	104	1.249%	2.569%	1.68	77.1%	22.9%

Regardless of whether we optimize for performance or balance, adding a timing element to the allocation strategy dramatically improves returns. This improvement manifests itself not just in the performance of the strategy but also in the performance of the strategy under each specific regime. The actual composition of the optimal portfolios is not surprising, either; the optimal portfolios under risk-seeking regimes are heavily-weighted toward the CSFB/Tremont Index, whereas the optimal risk-averse portfolios are primarily concentrated in managed futures.

### Strategy 3: Dynamic Risk Aversion Hedging Using Managed Futures

We realize that Strategy 2 has practical constraints on implementation. Although one can trade this strategy by varying the MFS allocation, doing so will create some variance in portfolio leverage. Also, the recommended MFS proportion may be too large for many diversified portfolios. Furthermore, this strategy assumes that it is possible to re-enter and exit positions on a monthly basis. This assumption may not accurately reflect the constraints of one's holdings.

Consequently, we developed a strategy that incorporates the benefits of risk aversion timing using a more simplistic weighting model. Specifically, we assumed that the existing portfolio, represented by the CSFB/Tremont Hedge Fund Index, would be held constant and the only exposure that would be varied would be that to the managed futures space. This exposure would be toggled through entering and exiting an MFS position on a monthly basis.

The entry and exit mechanism is simple:



- If the Predictive Monthly Risk Aversion Index predicts a risk-averse month, a fixed-size MFS position is added to the portfolio.
- If the Predictive Monthly Risk Aversion Index predicts a risk-seeking month, the MFS position is set to zero.

We examined the results over a number of scenarios, varying the risk-averse MFS weight between 0% and 25%. Our results are shown in Figure 11.

**Figure 11: Benefits of Incorporating Managed Futures Exposure as a Hedge Against Risk-Aversion Since January, 1997**  
**Risk Regime Determined by Predictive Method**  
**Assumes Static 100% Leverage Allocation to CSFB/Tremont Hedge Fund Index**

Risk-Averse MFS Weight*	Maximum Portfolio Leverage**	Average Portfolio Leverage**	Risk-Averse Information Ratio	Risk-Seeking Information Ratio	Information Ratio	Information Ratio Spread***
0.0%	100.0%	100.0%	0.22	2.21	1.32	1.99
5.0%	105.0%	101.4%	0.33	2.21	1.37	1.88
10.0%	110.0%	102.8%	0.45	2.21	1.41	1.77
15.0%	115.0%	104.2%	0.55	2.21	1.44	1.66
20.0%	120.0%	105.6%	0.65	2.21	1.47	1.56
25.0%	125.0%	107.0%	0.74	2.21	1.50	1.47

\*MFS allocation is 0 under risk-seeking regimes

\*\*Portfolio Leverage is relative to the current portfolio allocation

\*\*\*Information Ratio Spread = (Risk-Seeking Information Ratio - Risk-Averse Information Ratio)

These results are very much in line with what was suggested by the optimized strategy; hedging risk aversion exposure by dynamically incorporating a managed futures product produces tangible improvements in performance. This improvement occurs in two forms:

- The overall Information Ratio of the portfolio improves as the amount of risk-averse managed futures exposure is increased.
- The spread between risk-averse and risk-seeking performance decreases as risk-averse managed futures exposure is increased.

Finally, these tests illustrate that the hedging allocation need not be large to extract pronounced benefits; **even a 5% conditional allocation to MFS improves risk-averse performance by 50%.**

## Conclusion

There is a strong relationship between market risk appetite and hedge fund performance, with hedge funds performing significantly better under risk-seeking regimes. Incorporating this information into allocation strategies creates opportunities to both improve overall performance regardless of market risk preferences and hedge out some of the endemic risk.



**Appendix 1: S&P Hedge Fund Index Performance Versus Conquest Risk Aversion Index  
Actual Daily Returns From Inception to September 14, 2005**

**Since October 2002**

S&P Hedge Fund Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-3.46%	75	-0.046%	0.156%	-4.77
Risk-Seeking	21.45%	670	0.032%	0.124%	4.15
Aggregate	17.98%	745	0.024%	0.130%	2.99

S&P Arbitrage Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-3.38%	75	-0.045%	0.242%	-3.01
Risk-Seeking	9.29%	670	0.014%	0.200%	1.12
Aggregate	5.90%	745	0.008%	0.209%	0.61

S&P Event-Driven Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-0.89%	75	-0.012%	0.132%	-1.45
Risk-Seeking	29.01%	670	0.043%	0.125%	5.59
Aggregate	28.12%	745	0.038%	0.126%	4.82

S&P Directional / Tactical Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-6.13%	75	-0.082%	0.321%	-4.11
Risk-Seeking	25.80%	670	0.039%	0.299%	2.08
Aggregate	19.66%	745	0.026%	0.302%	1.41

**Since April 2004**

S&P Equity Long/Short Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-3.99%	49	-0.082%	0.309%	-4.25
Risk-Seeking	10.88%	317	0.034%	0.216%	2.56
Aggregate	6.89%	366	0.019%	0.234%	1.30

S&P Equity Long/Short US Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-3.66%	49	-0.075%	0.381%	-3.16
Risk-Seeking	11.93%	317	0.038%	0.291%	2.08
Aggregate	8.27%	366	0.023%	0.307%	1.19

S&P Equity Long/Short Global Ex-US Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-4.31%	49	-0.088%	0.315%	-4.51
Risk-Seeking	9.76%	261	0.037%	0.218%	2.77
Aggregate	5.44%	310	0.018%	0.236%	1.20

**Since January 2003**

S&P Hedge Fund Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk-Averse	-14.01%	62	-0.226%	1.094%	-3.33
Risk-Seeking	21.72%	618	0.035%	1.029%	0.55
Aggregate	7.72%	680	0.011%	1.037%	0.18

\*Information ratio is defined as total annualized p/l divided by standard deviation of annualized returns  
(Sharpe ratio without risk-free rate)



**Appendix 2: HFRX Hedge Fund Index Performance Versus Conquest Risk Aversion Index**  
 Actual Daily Returns from Inception to September 16, 2005

Since April 2003

HFRX Global Hedge Fund Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-2.63%	54	-0.05%	0.21%	-3.66
Risk Seeking	16.23%	567	0.03%	0.15%	3.07
Aggregate	13.60%	621	0.02%	0.16%	2.23

HFRX Equal Weighted Strategies Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-2.58%	54	-0.05%	0.13%	-5.80
Risk Seeking	13.52%	567	0.02%	0.10%	3.74
Aggregate	10.94%	621	0.02%	0.11%	2.64

HFRX Convertible Arbitrage Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-5.11%	54	-0.09%	0.26%	-5.94
Risk Seeking	0.47%	567	0.00%	0.22%	0.06
Aggregate	-4.64%	621	-0.01%	0.22%	-0.54

HFRX Distressed Securities Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-2.84%	54	-0.05%	0.16%	-5.16
Risk Seeking	26.76%	567	0.05%	0.16%	4.77
Aggregate	23.93%	621	0.04%	0.16%	3.83

HFRX Equity Hedge Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-1.26%	54	-0.02%	0.36%	-1.04
Risk Seeking	17.07%	567	0.03%	0.26%	1.86
Aggregate	15.81%	621	0.03%	0.27%	1.51

HFRX Equity Market Neutral Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	0.44%	54	0.01%	0.15%	0.88
Risk Seeking	-4.08%	567	-0.01%	0.16%	-0.74
Aggregate	-3.64%	621	-0.01%	0.16%	-0.59

HFRX Event Driven Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-1.97%	54	-0.04%	0.27%	-2.20
Risk Seeking	26.37%	567	0.05%	0.20%	3.71
Aggregate	24.39%	621	0.04%	0.21%	3.01

HFRX Macro Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-6.84%	54	-0.13%	0.32%	-6.47
Risk Seeking	18.06%	567	0.03%	0.33%	1.57
Aggregate	11.21%	621	0.02%	0.19%	0.89

HFRX Merger Arbitrage Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-1.08%	54	-0.02%	0.19%	-1.73
Risk Seeking	11.92%	567	0.02%	0.15%	2.23
Aggregate	10.84%	621	0.02%	0.16%	1.77

HFRX Relative Value Arbitrage Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-2.50%	54	-0.05%	0.19%	-4.01
Risk Seeking	10.77%	567	0.02%	0.20%	1.50
Aggregate	8.27%	621	0.01%	0.20%	1.07

Since April 2004

HFRX Absolute Return Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-2.11%	31	-0.07%	0.12%	-8.84
Risk Seeking	4.11%	274	0.02%	0.11%	2.14
Aggregate	2.01%	305	0.01%	0.12%	0.91

HFRX Market Directional Index	Total Return	# of Days	Average Return	Standard Deviation	Information Ratio
Risk Aversion	-2.35%	31	-0.08%	0.39%	-3.11
Risk Seeking	7.97%	274	0.03%	0.29%	1.62
Aggregate	5.61%	305	0.02%	0.30%	0.98

\*Information ratio is defined as total annualized p/I divided by standard deviation of annualized returns  
 (Sharpe ratio without risk-free rate)



**Appendix 3: Performance of Indices and Index Proxies Versus Conquest Monthly Risk Aversion Index**

Regime Determined in Hindsight

Performance from January 1997 to August 2005

Index	Total Return	# of Months	Average Return	Standard Deviation	Information Ratio	Dominant Regime
<b>BTop 50 Managed Futures Index</b>						
Averse	38.48%	30	1.28%	2.92%	1.52	<b>AVERSE</b>
Seeking	27.80%	74	0.38%	2.87%	0.45	
Aggregate	66.28%	104	0.64%	2.90%	0.76	
<b>CSFB/Tremont Hedge Fund Index</b>						
Averse	0.67%	30	0.02%	3.09%	0.02	<b>SEEKING</b>
Seeking	85.57%	74	1.16%	1.54%	2.61	
Aggregate	86.24%	104	0.83%	2.17%	1.32	
<b>CSFB/Tremont Managed Futures Index</b>						
Averse	45.77%	30	1.53%	3.92%	1.35	<b>AVERSE</b>
Seeking	18.79%	74	0.25%	3.31%	0.27	
Aggregate	64.56%	104	0.62%	3.54%	0.61	
<b>CSFB/Tremont Convertible Arbitrage Index</b>						
Averse	14.89%	30	0.50%	2.02%	0.85	<b>SEEKING</b>
Seeking	60.69%	74	0.82%	1.10%	2.58	
Aggregate	75.58%	104	0.73%	1.45%	1.74	
<b>CSFB/Tremont Dedicated Short Index</b>						
Averse	55.36%	30	1.85%	6.64%	0.96	<b>AVERSE</b>
Seeking	-68.41%	74	-0.92%	4.42%	-0.72	
Aggregate	-13.05%	104	-0.13%	5.34%	-0.08	
<b>CSFB/Tremont Emerging Markets Index</b>						
Averse	-41.56%	30	-1.39%	6.18%	-0.78	<b>SEEKING</b>
Seeking	120.52%	74	1.63%	3.35%	1.68	
Aggregate	78.96%	104	0.76%	4.57%	0.58	
<b>CSFB/Tremont Equity Neutral Index</b>						
Averse	29.64%	30	0.99%	1.09%	3.15	<b>SEEKING</b>
Seeking	57.42%	74	0.78%	0.67%	3.99	
Aggregate	87.06%	104	0.84%	0.82%	3.53	
<b>CSFB/Tremont Event-Driven Index</b>						
Averse	-6.16%	30	-0.21%	2.67%	-0.27	<b>SEEKING</b>
Seeking	97.94%	74	1.32%	0.87%	5.28	
Aggregate	91.78%	104	0.88%	1.76%	1.74	
<b>CSFB/Tremont Distressed Debt Index</b>						
Averse	-6.16%	30	-0.21%	2.85%	-0.25	<b>SEEKING</b>
Seeking	108.87%	74	1.47%	1.04%	4.90	
Aggregate	102.71%	104	0.99%	1.92%	1.78	
<b>CSFB/Tremont Event-Driven Multi-Strategy Index</b>						
Averse	-6.92%	30	-0.23%	2.82%	-0.28	<b>SEEKING</b>
Seeking	93.96%	74	1.27%	1.04%	4.25	
Aggregate	87.04%	104	0.84%	1.88%	1.54	
<b>CSFB/Tremont Risk Arbitrage Index</b>						
Averse	1.40%	30	0.05%	1.77%	0.09	<b>SEEKING</b>
Seeking	58.66%	74	0.79%	1.03%	2.67	
Aggregate	60.06%	104	0.58%	1.34%	1.50	
<b>CSFB/Tremont Fixed-Income Arbitrage Index</b>						
Averse	-2.15%	30	-0.07%	1.72%	-0.14	<b>SEEKING</b>
Seeking	48.86%	74	0.66%	0.69%	3.30	
Aggregate	46.71%	104	0.45%	1.15%	1.36	
<b>CSFB/Tremont Global Macro Index</b>						
Averse	16.81%	30	0.56%	4.32%	0.45	<b>SEEKING</b>
Seeking	92.65%	74	1.25%	2.10%	2.06	
Aggregate	109.46%	104	1.05%	2.94%	1.24	
<b>CSFB/Tremont Long/Short Equity Index</b>						
Averse	0.21%	30	0.01%	4.22%	0.01	<b>SEEKING</b>
Seeking	107.83%	74	1.46%	2.58%	1.95	
Aggregate	108.04%	104	1.04%	3.22%	1.12	
<b>CSFB/Tremont Multi-Strategy Index</b>						
Averse	16.63%	30	0.55%	1.50%	1.28	<b>SEEKING</b>
Seeking	64.29%	74	0.87%	0.76%	3.94	
Aggregate	80.92%	104	0.78%	1.05%	2.57	



**Appendix 4: Performance of Popular Indices and Index Proxies Versus Conquest Monthly Risk Aversion Index**  
**Regime Predicted by Regime on Last Trading Day of Prior Month**  
**Performance from January 1997 to August 2005**

<b>BTop 50 Managed Futures Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	35.12%	29	1.21%	3.25%	1.29	<b>AVERSE</b>
Seeking	31.16%	75	0.42%	2.73%	0.53	
Aggregate	66.28%	104	0.64%	2.90%	0.76	
<b>CSFB/Tremont Hedge Fund Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	5.54%	29	0.19%	3.01%	0.22	<b>SEEKING</b>
Seeking	80.70%	75	1.08%	1.68%	2.21	
Aggregate	86.24%	104	0.83%	2.17%	1.32	
<b>CSFB/Tremont Managed Futures Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	33.29%	29	1.15%	3.94%	1.01	<b>AVERSE</b>
Seeking	31.27%	75	0.42%	3.34%	0.43	
Aggregate	64.56%	104	0.62%	3.54%	0.61	
<b>CSFB/Tremont Convertible Arbitrage Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	5.96%	29	0.21%	2.01%	0.35	<b>SEEKING</b>
Seeking	69.62%	75	0.93%	1.09%	2.95	
Aggregate	75.58%	104	0.73%	1.45%	1.74	
<b>CSFB/Tremont Dedicated Short Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	20.21%	29	0.70%	6.48%	0.37	<b>AVERSE</b>
Seeking	-33.26%	75	-0.44%	4.78%	-0.32	
Aggregate	-13.05%	104	-0.13%	5.34%	-0.08	
<b>CSFB/Tremont Emerging Markets Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	-15.72%	29	-0.54%	6.10%	-0.31	<b>SEEKING</b>
Seeking	94.68%	75	1.26%	3.69%	1.18	
Aggregate	78.96%	104	0.76%	4.57%	0.58	
<b>CSFB/Tremont Equity Neutral Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	31.04%	29	1.07%	1.18%	3.14	<b>SEEKING</b>
Seeking	56.02%	75	0.75%	0.60%	4.29	
Aggregate	87.06%	104	0.84%	0.82%	3.53	
<b>CSFB/Tremont Event-Driven Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	3.60%	29	0.12%	2.71%	0.16	<b>SEEKING</b>
Seeking	88.18%	75	1.18%	1.07%	3.80	
Aggregate	91.78%	104	0.88%	1.76%	1.74	
<b>CSFB/Tremont Distressed Debt Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	7.70%	29	0.27%	2.92%	0.31	<b>SEEKING</b>
Seeking	95.01%	75	1.27%	1.24%	3.54	
Aggregate	102.71%	104	0.99%	1.92%	1.78	
<b>CSFB/Tremont Event-Driven Multi-Strategy Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	0.03%	29	0.00%	2.77%	0.00	<b>SEEKING</b>
Seeking	87.01%	75	1.16%	1.26%	3.20	
Aggregate	87.04%	104	0.84%	1.88%	1.54	
<b>CSFB/Tremont Risk Arbitrage Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	3.39%	29	0.12%	1.61%	0.26	<b>SEEKING</b>
Seeking	56.67%	75	0.76%	1.17%	2.25	
Aggregate	60.06%	104	0.58%	1.34%	1.50	
<b>CSFB/Tremont Fixed-Income Arbitrage Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	-0.18%	29	-0.01%	1.79%	-0.01	<b>SEEKING</b>
Seeking	46.89%	75	0.63%	0.69%	3.13	
Aggregate	46.71%	104	0.45%	1.15%	1.36	
<b>CSFB/Tremont Global Macro Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	14.81%	29	0.51%	4.37%	0.40	<b>SEEKING</b>
Seeking	94.65%	75	1.26%	2.10%	2.08	
Aggregate	109.46%	104	1.05%	2.94%	1.24	
<b>CSFB/Tremont Long/Short Equity Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	9.74%	29	0.34%	3.98%	0.29	<b>SEEKING</b>
Seeking	98.30%	75	1.31%	2.83%	1.61	
Aggregate	108.04%	104	1.04%	3.22%	1.12	
<b>CSFB/Tremont Multi-Strategy Index</b>	<b>Total Return</b>	<b># of Months</b>	<b>Average Return</b>	<b>Standard Deviation</b>	<b>Information Ratio</b>	<b>Dominant Regime</b>
Averse	19.59%	29	0.68%	1.46%	1.60	<b>SEEKING</b>
Seeking	61.33%	75	0.82%	0.83%	3.42	
Aggregate	80.92%	104	0.78%	1.05%	2.57	



## **Appendix 5: Selected References**

There are a number of papers in which the benefits of incorporating managed futures into a portfolio are explored. Some of these papers include:

- CISDM Research Department; “The Benefits of Managed Futures 2005 Update”; 2005
- Thomas Schneeweis, Richard Spurgin, Mark Potter; “Managed Futures and Hedge Fund Investment for Downside Equity Risk Management”; 1996
- Richard Spurgin; “Some Thoughts on the Source of Return to Managed Futures”
- Timothy Lee, Marc Malek, Jeffrey Nash, Jeffrey Rose; “The Beta of Managed Futures”; 2005