CHAPTER I

INTRODUCTION

1.1 Active Approaches to Portfolio Management

Active portfolio management techniques (in contrast to passive approaches) may be growing in importance for traditional assets as a result of their potential to add extra return above a passive benchmark return. Active portfolio management is often further divided into market timing (the asset class allocation decision) and the manager or security selection components.

The market timing component of active asset allocation has been defined by Kazemi and Martin (2001) as the "active departure from the strategic asset mix in response to shift in risk-reward characteristics of different asset classes based on changes in the investment environment." This market timing or tactical asset allocation (hereinafter abbreviated as TAA) seeks to add value over strategic asset allocation by overweighting markets or sub-sectors of the market expected to outperform and underweighting markets expected to underperform. In the context of hedge funds, different hedge fund styles (and not asset classes) are the object of the tactical asset allocation and the alternative is manager selection (not asset selection),

One manager of traditional assets describes the objective of TAA as "to use fundamental analysis of economies, markets and shorter-term investor sentiment, along with quantitative tools, to build an information advantage relative to what is priced into the markets." They further describe their TAA process as altering allocations based on five fundamental factors, including valuation, business cycle, liquidity, risk, and

technical factors using Bayesian optimization to under- and overweight asset classes. Another investment manager described changing asset allocation weights based on earnings yield, volatility, short term vs. long term rates, and inflation variables.

It should be noted, however, that there is not universal acceptance of tactical asset allocation approaches as a portfolio investment tool, even for traditional investments. Russell Investment (2003) argued that tactical asset allocation in traditional assets was a "high risk approach" (when contrasted with asset selection) with fewer opportunities to diversify forecast errors. They also pointed out that not only does successful implementation require good analysis of future conditions, but an interpretation of how these conditions will impact the asset classes. Nevertheless, assessing the potential of TAA in hedge funds is the focus of this thesis.

1.2 Hedge Funds

Hedge funds have commanded increased attention in recent years. While high net worth individuals comprised its investor base in its early years and its strategies were concentrated primarily in global macro and long/short equity strategies, the industry has expanded in two ways. First, the size of the industry, as measured by invested assets has increased dramatically to almost $800 million by 2004, bolstered by increasing inflows from institutional investors. Barclays Capital reported that hedge funds assets have grown an average of 20% a year since 1990. Secondly, the increase in assets has led to an increase in both the number of managers and variety of invested strategies.

The expansion along both the number of manager and strategy dimensions has led practitioners and academics to seek to better understand hedge funds, both as standalone investments and in conjunction with traditional investments. In initial studies, traditional portfolio construction techniques depending on mean variance

analysis were applied to hedge funds. A further examination of hedge fund returns has pointed to the need for more sophisticated approaches to handle non-normal and serial correlated return characteristics.

The existence of multiple hedge fund investment strategies or styles and diversity of markets that hedge funds participate in suggests the possibility that TAA techniques may be able to add alpha versus a more static approach.

1.2.1 Unique Characteristics of Hedge Funds

Hedge funds are most simply described as private investment partnerships. Beyond this simple description, the definition of hedge funds is somewhat vague, as it is based primarily on their exemption (in the United States) from key elements of law governing investment vehicles: The Securities Act of 1933 (requiring registration of public security offerings), and the Investment Company Act of 1940 (requiring registration of investment companies) in the United States. The legal aspects of hedge funds are beyond the scope of this study, but have been discussed in some detail by Anson (2002).

Hedge funds make themselves exempt from portions of these regulations by limiting the number of investors and by making their securities offers non-public, limited to accredited or non-U.S. investors.

The practical effect of the exemptions is that hedge funds have a greater degree of flexibility relative to their mutual fund counterparts. This is manifested in:

1. Ability to Access Variety of Markets and Instruments

Hedge funds can employ a variety of cash and derivative instruments in equities, fixed income, foreign exchange, and commodity markets.

2.   Diversity of Techniques

As a consequence of their light regulation (relative to equity and fixed income investments), hedge funds are able to go both long and short securities, utilize derivatives, and apply leverage. This provides a greater diversity of performance results, even among funds practicing the same general strategy.
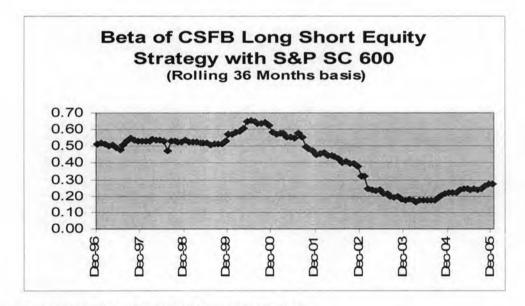
3.   Dynamic Nature of Exposures

Hedge funds approaches are more dynamic in nature and can be more responsive to perceived changes in the opportunity set. While an equity mutual fund is expected to be close to fully invested in equities at all times, a hedge fund with an equity focus (or hedge fund index like the CSFB/Tremont Long Short Equity) may be both long and short securities and vary their market exposure over time, in line with market conditions. In Figure A on the following page, the calculated beta of the Long/Short Equity Index on a rolling 26-month basis varied from a high above 0.60 and a low below 0.20 between 1994-2006.

The use of options and trading techniques like stop losses creates the possibility of non-linear payoffs.

Figure A
Dynamic Nature of Beta in CSFB/Tremont Long/Short Equity Strategy
1994-2005 (36 Month Trailing Window)

Beta of CSFB Long Short Equity
Strategy with S&P SC 600
(Rolling 36 Months basis)

Source: Author from CSFB/Tremont data.

4.   Incentive Schemes

While mutual funds are typically compensated based solely on assets managed, hedge funds are generally awarded an incentive fee of 10-30% in addition to an asset management fee of 0-2%. This creates another rationale for non-linear payoffs.

1.2.2   Alpha and Hedge Fund Returns

The marketing of hedge funds often promotes hedge funds as an absolute return strategy, designed to deliver positive returns in any market environment (often referred to as "alpha"). This is in contrast to mutual funds and other long-only investments that have a significant market exposure component (although active (non-index) managers are seeking alpha as well.)

The terms alpha and beta derive, of course from the Capital Asset Pricing Model (CAPM) developed by Sharpe (1963). In the context of the CAPM, the alpha is

relative to one factor, the market portfolio. However, the beta concept has been extended in application to equities by Fama and French (1994) and others to three factors to incorporate the outperformance of small cap stocks and stocks with a high book-value-to-price ratio.

Because alpha for the market as a whole is zero by definition, alpha is a rare and desired attribute, and hedge funds seek to justify their performance incentive fee on the basis of delivering alpha through manager skill. On the other hand, iff an investment's return comes solely from market factors, a 20% performance fee seems high relative to index.

Table I summarizes the results for a very simple alpha model for hedge funds based on three factors: S&P Smallcap Index, the change in BAA credit spreads, and the change in implied equity volatility as measured by VIX. The model was estimated based on non-overlapping 36-month periods. Credit spreads and equity implied volatility have been mentioned by several sources as drivers of return for hedge funds.

Table I
Estimated Monthly Alpha by Strategy
CSFB/Tremont Indices
By 3-Factor Model

Strategy	1994-96	1997-99	2000-02	2003-05	Average
Convertible Arbitrage	0.219	0.287	0.514	*-0.236*	0.196
Dedicated Short	0.627	*-0.359*	0.714	**0.714**	0.424
Emerging Markets	*-0.276*	0.101	0.373	0.673	0.218
Eq. Market Neutral	*0.254*	0.621	0.483	0.299	0.414
Distressed	**0.803**	**0.657**	0.368	0.681	**0.627**
ED Multi-Strategy	0.311	0.368	0.201	0.215	0.274
Risk Arbitrage	0.270	0.269	*0.008*	*-0.150*	*0.099*
Fixed Income	0.365	-0.012	0.415	-0.073	*0.174*
Global Macro	**1.115**	0.422	**1.232**	0.248	**0.754**
Long Short Equity	0.090	**1.442**	*0.089*	0.238	0.465
Managed Futures	0.454	*-0.073*	**0.899**	-0.041	0.310
Multi-Strategy	*0.035*	0.445	0.248	0.206	0.234
Average	0.356	0.347	0.462	0.231	0.349

Source: Author based on CSFB/Tremont Data

While we did not endeavor to produce a comprehensive model of predicted alpha (and the use of a three year windows in the above table provides only 48 data points), it should be noted that the alpha of the two best performing strategies each three-year period regressed toward the mean in the subsequent three-year period for all strategies in six of six occasions. Conversely, the two worst performing strategies moved toward the mean in five of the six periods. It seems possible that one or both of two factors caused this effect. More hedge funds may have moved into the strategies with high alpha (and departed from strategies with low alpha) or more money was invested in existing managers practicing the strategies with strong alpha. Either of these two reasons might cause return dilution and regression toward the mean.

Table II below looks at the same data after subtracting the mean monthly alpha

for the period for all CSFB/Tremont indices.   While most strategies lie in the +/-

0.10% range from the monthly mean, global macro and distressed returns have

performed especially well and risk arbitrage and fixed income arbitrage particularly

poorly over the entire twelve year period.

Table II
"Excess Monthly Alpha" by Strategy
CSFB/Tremont

Strategy	1994-96	1997-99	2000-02	2003-05	Average
Convertible Arbitrage	-0.137	-0.060	0.052	-0.467	-0.153
Dedicated Short	0.271	-0.715	0.358	0.358	0.068
Emerging Markets	-0.632	-0.255	0.017	0.317	-0.138
Eq.Market Neutral	-0.102	0.265	0.127	-0.057	0.059
Distressed	0.447	0.301	0.012	0.325	**0.272**
ED Multi-Strategy	-0.045	0.012	-0.155	-0.141	-0.082
Risk Arbitrage	-0.086	-0.087	-0.348	-0.506	*-0.256*
Fixed Income	0.009	-0.368	0.059	-0.429	*-0.182*
Global Macro	0.759	0.066	0.876	-0.108	**0.399**
Long Short Equity	-0.266	1.086	-0.267	-0.118	0.109
Managed Futures	0.098	-0.429	0.543	-0.397	-0.046
Multi-Strategy	-0.321	0.089	-0.108	-0.150	-0.122

Source: Author from CSFB Tremont Data

1.2.3   Reported Practitioner Use of TAA

Several hedge fund practitioners have suggested the application of TAA
approaches in hedge funds. These include:

    1)   **CrossBorder Capital:** This London based research firm offers
a product, Tactical Style Selection, which dynamically allocates to nine hedge
fund styles based on CrossBorder's assessments of changing market and credit
risk over a 4-5 year market cycle. There have been several hedge fund products
launched since 2003 based on Crossborder's approach. For example. PlusFunds
Group Inc. announced in July 2003 a Style Selection Share Class based on
CrossBorder's work.

    2)   **SSGA**: SSGA, a hedge fund asset management company,
indicated "Factor analysis is used to emphasize those styles that can perform
best in the current environment."

    3)   **AlternativeSoft AG**: AlternativeSoft AG, a software vendor,
offers a tactical asset allocation module for hedge funds that forecasts hedge
fund strategy returns using a stepwise regression model with lags based on
significant economic factors and promises alpha over a strategic allocation of 1-
5% per year. Two portfolio simulations, differing in forecast horizon, indicate
an alpha of 2-3% per year.

    4)   **Citigroup:** Clifford DeSouza indicates that a tactical approach
can be taken to adjust strategy weightings for client portfolios as "capacity and
opportunity sets changes"

Detractors to the use of tactical approaches to hedge funds are few, but Bell
(2004) argued that a tactical asset allocation approach to hedge funds may be difficult
to implement because hedge fund returns are a combination of market and active return
exposures. It is contended that hedge funds (due to transparency, liquidity, and cost

reasons) may be an inefficient vehicle to time market exposure and, furthermore, active returns may be difficult to time.

1.2.4 The Potential of Tactical Asset Allocation in Hedge Funds

The potential level of TAA alpha mentioned by practitioners is significant relative to recent returns of hedge funds. While two prominent hedge fund indices reported annualized returns in the range of 9%-11% over the ten year period 1996-2005 (and only 6%-8% in the five year period 2001-05) as shown in Table III below, several practitioners quote potential annualized alpha of 1-5% for TAA. One source indicated an annualized alpha of 2-3% from its TAA program over 35 months, while another source quoted 2.6% annualized alpha over a longer, 82 month period (6 year, 10 month period). It is unclear whether these are actual or pro forma returns, or a combination of both and whether the benchmark is appropriately specified.

Table III
Annualized Returns for EACM and CSFB Indices and Sub-Indices
January 1996-December 2005

	1996-2000	2001-2005	1996-2005
EACM 100	**12.39%**	**5.87%**	**9.08%**
Strategy Groupings			
EACM Relative Value	8.09%	5.26%	6.66%
EACM Event Driven	12.16%	9.92%	11.03%
EACM Equity	19.84%	3.10%	11.16%
EACM Asset Allocation	10.11%	8.18%	9.14%
CSFB Hedge Fund Index	**14.69%**	**7.94%**	**11.27%**

Source: Author from CSFB/Tremont and EACM data.

Table IV (on the following page) depicts the range of annual returns of Evaluation Associates and CSFB/Tremont indices by strategy. There is a wide

disparity (on average 38-39%) between the best and worst performing strategy each year. It is therefore not inconceivable that even relatively small tactical changes in allocations could impact the returns of a portfolio of hedge funds significantly.

Table IV
Range of Strategy Returns
By Year, 1996-2005

	EACM Indices				CSFB Indices		
	Best	Worst	Spread		Best	Worst	Spread
1996	23.39%	-10.19%	33.57%	1996	34.48%	-5.48%	39.96%
1997	24.33%	-1.66%	25.99%	1997	37.11%	0.43%	36.68%
1998	18.15%	-16.32%	34.47%	1998	20.66%	-37.66%	58.32%
1999	69.02%	-6.01%	75.03%	1999	47.22%	-14.22%	61.44%
2000	28.40%	-14.66%	43.06%	2000	25.65%	-5.51%	31.16%
2001	12.57%	-11.22%	23.79%	2001	20.01%	-3.67%	23.68%
2002	30.32%	-19.66%	49.98%	2002	18.34%	-3.46%	21.80%
2003	37.14%	-25.92%	63.06%	2003	28.74%	-32.60%	61.33%
2004	17.80%	-10.72%	28.52%	2004	15.62%	-7.71%	23.34%
2005	12.17%	0.34%	12.61%	2005	17.38%	-2.55%	19.93%
	Average Spread		**39.01%**		**Average Spread**		**37.76%**

Source: Author from CSFB/Tremont, Evaluation Associates data

1.3   Rationale for the Study

This study may be important in several regards. First, it will add to the sparse body of literature of the use of TAA in hedge fund portfolio management. It will do so by overcoming limitations of Amenc et al. (2002), an attempt to evaluate TAA in the context of hedge funds, allowing a more definitive conclusion about the applicability of TAA to hedge fund investments.

The study may be of special significance for hedge fund-of-fund portfolio managers. Hedge fund of funds serve as a "manager of managers", assembling managers of different styles into a portfolio. Several researchers have found that hedge fund of funds underperform a portfolio of hedge funds, primarily due to an additional level of fees at the fund-of-fund level. TAA (in addition to superior manager selection) may provide a source of alpha which could overcome the drag of this second level of fees.

1.4   Objectives of the Study

Our specific objectives are to:

(1)   Understand common risk factors of hedge fund returns through a statistical technique called principal components analysis. After identifying the factors from PCA, we seek to relate them to known risk factors of hedge funds, including equity and bond market returns, implied and realized volatility, and credit spreads.

(2)   After identifying key drivers of hedge fund returns, assess their predictability.

(3)   Explicitly consider the structural impediments to frequent changes in allocations such as those mentioned by Bell (2004) by adjusting the

return forecast horizon to better match the environment that a fund-of-funds portfolio manager would face.

(4)   Develop strategic asset allocation for hedge fund portfolios

1.5   Scope of the Study

We limit ourselves to hedge fund index return data in the period 1996-2005, a common period for the two hedge fund index providers accessed: CSFB/Tremont, and Evaluation Associates.

Although ultimately, optimal use of tactical asset allocation may require consideration of individual hedge fund characteristics, because individual hedge funds have a diversity of approaches that may not be evident at the index level. However, focus on the strategy index level may be useful as a "proof of concept" of TAA and avoids constructing strategy indices from funds with short track records .

1.6   Organization of Study

The rest of this thesis is organized as follows. This section was intended to provide an introduction to hedge funds and the potential for application of tactical asset allocation through the reported use of TAA and the range of hedge fund returns. Section II provides a literature review, discussing in particular the methods and results of Amenc et al (2002), which provided the inspiration for this thesis. Section III provides the methodology and background on the data and data sources used in the study, while Section IV discusses both the results of the Principal Components Analysis conducted on twenty-five hedge fund indices and the main results of the Tactical Asset Allocation. Section V provides conclusions and suggests opportunities for further research.