

# Theta Research Notes

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## *Blending the Art & Science of Hedge Fund Investing*

**Executive Summary Investment Process**

November 2004

## Manager Selection

### **Investment Philosophy**

Theta Capital's investment objective is

*To manage portfolios of hedge funds that produce positive returns in all market environments*

To achieve this objective, we take a predominantly bottom-up approach reflecting our profound belief that hedge fund managers are well equipped to capitalize on varying market conditions. In other words, we do not actively manage our portfolios according to pre-formulated return expectations for the different hedge fund investment strategies. Rather, we strive to select managers that have proven the ability to successfully exploit investment opportunities across various market environments and we aim to compose portfolios of hedge funds with fundamentally different risk-return profiles to maximize the benefit of diversification. This approach endeavors to provide our clients with capital appreciation and downside protection, at all times.

Our investment philosophy is implemented by means of a structured research-driven investment process, where decisions are made with a healthy dose of common sense and expert judgement. This is the blend of art and science in our approach to hedge fund investing.

### **Manager Selection**

The objective of our manager selection process is to identify hedge fund managers with superior investment skills that have proven to operate in an uncorrelated way through different market environments. The selection process entails three research levels a hedge fund manager will have to go through, each with its own information requirements, documents and tasks and criteria that have to be satisfied to pass to the next research level. Our process is supported by several databases, a qualita-

tive information system and several tools (some proprietary) for quantitative fund analysis and stress-testing.

In our *qualitative* due diligence process we focus on:

- Competitive edge in strategy and trading style
- Investment process
- Risk management
- Background & experience
- Operational infrastructure

The objective of performing *quantitative analysis* of a hedge fund track record is twofold: risk analysis and relative return analysis. At Theta Capital, the initial focus is on the former since we believe that (similar to the hedge funds we invest in) we can target risk, but not returns. To deal with the relative short track records of some hedge funds, we apply simulation techniques that enable us to extract information "hidden" in the data and that match the exact purpose of quantitative risk analysis: make an assessment of what *could have happened*, rather than merely observe what actually *has happened*. The diagram below displays the four dimensions of quantitative due diligence at Theta Capital Management.

#### **Exhibit 1 Dimensions of Quantitative DD**

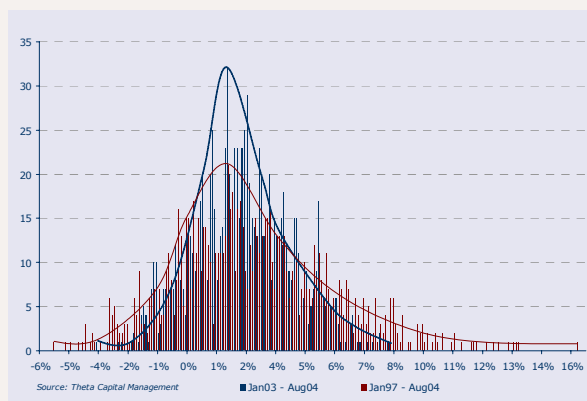
|          | Risk  | Return  |
|----------|---|---|
| Absolute | <ul style="list-style-type: none"> <li>• Shape of return distribution (skewness &amp; fat tails)</li> <li>• Drawdown analysis</li> <li>• Stability over subperiods</li> </ul> | <ul style="list-style-type: none"> <li>• Risk-adjusted returns</li> <li>• % positive months</li> </ul>  |
| Relative | <ul style="list-style-type: none"> <li>• Style analysis</li> </ul>  | <ul style="list-style-type: none"> <li>• Performance versus peers &amp; HF indices over time</li> </ul> |

First, we focus on the pay-off structure of the fund, as reflected in the shape of the return distribution. More specifically, we look at parameters that indicate the downside risk to returns, such as negative skewness, fat

## Portfolio Construction

tails and outliers of the distribution, as well as stability of these parameters. Clearly, we prefer fund managers that manage to limit downside surprises (prevent outliers), while maintaining upside potential. We will test the stability of the risk profile over various sub-periods and the chart below provides an illustration of this.

**Exhibit 2 Stability of Payoff Structure**



A crucial element of our quantitative fund analysis is to assess the potential impact of historical periods of market dislocations. In addition, we apply stress-tests and scenario analysis to gain further insight in the sensitivities of the fund's investment approach. However, to allow for the dynamism inherent in a fund's investment strategy, quantitative techniques should not be applied in a strict and rigid manner; a healthy dose of common sense and expert judgement is required.

Due to their investment strategies and applied instruments, hedge funds demonstrate exposure to non-market risks such as liquidity risk, counterparty risk and operational risk. These risks can only be mitigated by a professional due diligence on the fund's operational infrastructure which complements the usual background checks and financial due diligence. The objective of our *operational due diligence* process is to provide a trans-

parent picture of the infrastructure supporting the trading strategy in terms of:

- People & organization
- Processes & systems
- Involvement of third party service providers

Operational quality always needs to be assessed in the context of the investment strategy and trading style that a manager pursues. Although this approach is no guarantee against operational losses, it does allow us to make well-informed investment decisions.

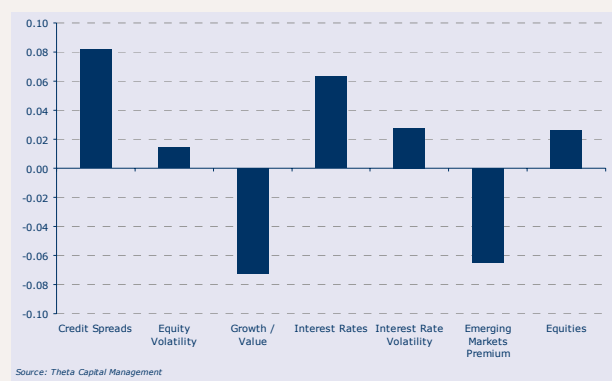
### **Portfolio Construction**

In our portfolio construction, we are driven by the notion that we can only set the level of portfolio risk, and the market will eventually dictate returns. We do not emphasize top-down (tactical) allocation based on relative return expectations across the various hedge fund strategies. Rather, we take a more bottom-up approach where risk parameters on the portfolio level determine the allocation across individual hedge funds. Allocation limits to certain strategies and managers are applied to control concentration risk. This approach to portfolio construction complements our manager selection process, where we strive to select managers that are able to produce positive returns in all market environments.

Our process embodies a continuous *portfolio optimization* in which we aim to minimize concentration risk by focusing on low correlations between managers and strategies. Since we aim to construct a portfolio that generates positive returns in all market conditions, we test for stability of correlations over varying time frames, including periods of serious market dislocations. We believe this disciplined, quantitative approach enables us to engineer risk-return profiles that match our clients' needs and preferences.

## Risk Management

**Exhibit 3 Portfolio Sensitivity Analysis**



The objective of *portfolio sensitivity analysis* is to identify potential concentration risk with regard to market exposures. Although we acknowledge that the style portfolio reflects a purely passive approach and the actual exposures of the portfolio will be much more dynamic, the identified factor mix may provide a good indication of the risk-return drivers of the portfolio. The chart above provides an example output of this sensitivity analysis. We like to stress that this analysis is still work in progress as the underlying methodologies are continuously evolving.

### **Risk Management**

At Theta Capital, risk management is an integrated element of our manager selection and portfolio construction processes, rather than a separate task to be performed after the fact. Our approach to risk management reflects our belief that hedge fund managers are the ultimate risk managers: in the absolute-return world of hedge funds, it is the manager who defines investor's risk and not the market. Because hedge funds target absolute returns, risk management is driven by their P&L rather than deviation from some market benchmark. The main risk for an investor is therefore expo-

sure to the ability of the fund manager to actively control total risk.

As for risk on a portfolio level, we are driven by the notion that there will always be extreme market events: rare and unexpected deviations from the prevailing pattern in the market. For these events, by definition unpredictable in both timing and size, there is only one risk management tool -but a powerful one-: diversification. This means that in our portfolio construction process, we take a bottom-up approach where the risk parameters on the portfolio level determine the allocation across individual hedge funds.

Extensive stress-testing and scenario analysis, both on individual hedge funds and on the portfolio level, provides further insight into the sensitivities to specific market events. In addition, we acknowledge that managers may turn out to be more correlated than history indicates. Since this potential breakdown of the correlation structure would undermine the risk-return profile of our optimal portfolio, it is an important element of portfolio stress-testing.

A more detailed description of the Theta Capital investment process is available upon request.

### **Information**

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