Exhibit 21

Managing Hedge Fund Risk

From the Seat of the Practitioner – Views from Investors, Counterparties, Hedge Funds and Consultants

Edited by Virginia Reynolds Parker

RISK

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Risk Management Issues for the Family Office

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The risk management issues of a family office should be examined in relation to its subjective definition of risk, which is derived from the family investment preferences and objectives. Accordingly, in this chapter, we will first expose the typical family office preferences and objectives. We will then briefly review the theory of risk quantification and its limits. Finally, we will examine some of the key issues of hedge fund risk qualification that we have identified as hedge fund asset allocator.

THE INVESTMENT PREFERENCES AND OBJECTIVES OF THE FAMILY OFFICE

The typical family group is already rich. Consequently, its investment strategy will be mostly guided by wealth preservation and wealth transfer issues from one generation to the next, as opposed to pure wealth creation objectives. In this context, one would expect the family to have a long-term investment horizon that should govern short term return volatility acceptance and lead to long-only equity investments. Most investment management textbooks reinforce this view.

However, the behavioural reality of family office investment is different. The fact that the majority of global assets allocated to hedge funds comes from private investors and family offices clearly illustrates the specificity of their investment preferences. These preferences, which are fundamentally governed by an asymmetrical sensitivity to loss vis-à-vis profits, govern family office allocation to hedge funds.

Objective one: Avoid large losses

The family office will structure its investments in order to avoid large losses. Because it attaches a high value to capital preservation, it will tend to exclude from its universe of potential investments the high-risk, high-return investment strategies so that it can focus most of its resources on

strategies displaying a higher chance of success. Instead of trying to hit home runs, the family office objective will be to concentrate on return consistency in order to benefit from the returns compounding effect.

Objective two: Protect the downside

Equity markets' performance over the last decade has certainly twisted investors' return expectations and their perception of financial risks. Financial markets do not always move up; bear markets, corrections and crashes do happen. The fear of these disasters and the search for a remedy are central to the family office investment behaviour. In this context, hedge fund allocation is motivated by the capacity of some strategies to absorb financial markets' shocks and to provide substantial downside protection.

Objective three: Search for α or absolute returns

The corollary to the downside protection need for the family office is its search for investments that display asymmetric return profiles like that produced by the best hedge fund strategies. Typically, their performance engine is not β the market index, but rather the α that is extracted from successful short term market timing, equity hedge stock picking, equity market neutral, event driven, relative value or arbitrage relationship.

Objective four: Maximise risk-adjusted returns

Within the framework delimited by the above preferences and objectives, the family office should aim to optimise the risks-adjusted returns related to its investment strategy. The realisation of this objective will be conditioned by its capacity to allocate assets:

- ❑ to managers who display significant competitive advantage and skills; and
- ❑ within a structure that secures a commonality of interest between the manager and their investors.

Based on these preferences and objectives, the risk management objective of the family office hedge fund asset allocator will be to:

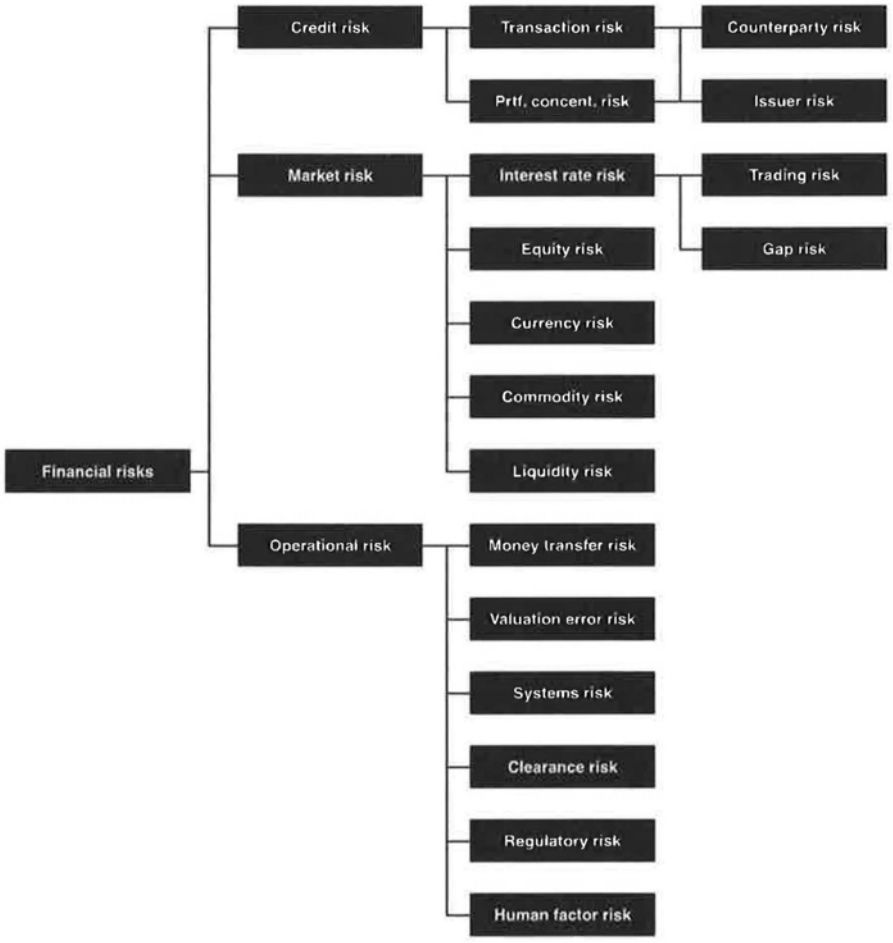
- ❑ identify and exclude disaster loss potential;
- ❑ understand and evaluate the performance engine and attached risks; and
- ❑ define and implement a coherent portfolio construction process.

RISK QUANTIFICATION IN THE CONTEXT OF HEDGE FUND ALLOCATION

The theory

Risk is the exposure to uncertain change. It can be seen as the combination of the probability of a negative event happening and the loss associated with the occurrence of this negative event. Financial risks are usually split into three main categories: credit risk, market risk and operational risks. The table below shows how these different risk categories are usually structured into sub-components.

Table 1 Categorisation of risk



The financial industry measures market risks and credit risks using value-at-risk (VAR) methodology. VAR is defined as the maximum possible loss for a given portfolio within a known confidence interval over a specific time horizon. In their never-ending quest for more quantification, some also measure operational risks using a similar value-at-operational risk methodology.

According to these methodologies, it should be possible to measure the VAR for each hedge fund and each potential combination of hedge fund portfolio. The association of hedge funds portfolio returns to these measures should enable us to construct the optimised portfolio in terms of risk-adjusted returns.

The limitations

It is reassuring to measure what we fear most and human nature is such that the quantification and measure of risk too often translate into an improper sense of comfort and control. Beyond the very large number of system and operational issues that would need to be solved and summarised into a single VAR number to quantify the risks of hedge fund investing, I strongly believe that the value of such an exercise would be very limited. Here are the main reasons.

Market rate distribution

The quantification of risk relies on the definition of a probability distribution of market moves. The precise definition of such distribution is extremely difficult. Typically, most methodologies fail to take skewed distributions into account, and are very imprecise when it comes to extreme market move measurements, ie, when we most need them.

Linear versus non-linear relationships

The relationship between portfolio market value and market change for complex financial instruments is not typically linear. Accordingly, it becomes much more difficult to measure the impact of market moves on the value of such instruments because most calculations neglect the second order or gamma effects. This is usually the case for any instrument with embedded optionality, or convex fixed-income instruments.

Instability of market relationships

Most methods of calculating VAR rely on estimates of the volatilities and correlations of market changes in order to aggregate diverse risky positions. The problem is that these correlations are highly unstable and tend to migrate towards one in times of market crises.

Instrument-specific risks

Beyond the theoretical limitation of VAR, it is important to recognise that the methodology is of no value in many hedge fund strategies. For instance, it is not possible to describe event-driven strategies such as distressed securities investing or risk arbitrage strategies with VAR methodology.

PRACTICAL ISSUES RELATED TO RISK QUANTIFICATION

Forced to recognise the practical and theoretical limits and difficulties of risk quantification, the family office hedge fund allocator must rely on prudence, prevention and judgement. The following are some of the lessons we have learned through both good and bad experiences.

Some operational risks – service providers and structure

The offshore hedge fund investor should realise that there is no proper structure in place to ensure the protection of his interests. Detailed review of the prospectus, the articles of associations, the fund structure and the service providers must be conducted. However, while this review will reduce operational risks, it will not eliminate them.

Offshore hedge fund service providers

Hedge fund investors rely on the quality and responsibility of administrators and auditors to ensure control of assets, independent NAV calculation and accuracy of financial statements. Unfortunately, all too often the basic structure is not in place in the offshore industry. We believe that today, there is a significant market opportunity for serious service providers ready to implement and enforce adequate structure in terms of administration and audit.

Administrators, who should have the role of global custodian, do not always have control of assets. As directors of their funds, any hedge fund managers have the signatory power necessary to move assets and open accounts where and when they want. In addition, it is still common for administrators to leave mark-to-market responsibilities in the hands of hedge fund managers instead of using truly independent pricing sources.

Moreover, auditors currently seem to be willing to limit their responsibilities and liabilities to the point that audited financial statements are less and less a guarantee of financial fairness. The following are extracts from a letter of engagement from one of the top five worldwide audit firms.

> "The Liability of [the audit firm name] to the company in connection with this engagement shall be limited in total to the fees paid to [the audit firm name]"

> "As you are aware, there are inherent limitations in the audit process, including, for example, selective testing and the possibility that collusion or forgery may preclude the detection of material errors, fraud, and illegal acts. Accordingly, a material misstatement may remain undetected."

Hedge fund legal documents

The fund prospectus, articles of association and the subscription agreement are the fundamental documents that structure the rights and obligations of the investor and the fund. The additional contracts to be reviewed are the

investment management and advisory contract and the administration and custody contracts. As illustrated by the following extracts that have been written by a prominent US legal firm, the content of these documents should be carefully reviewed to ensure that the balance of the parties' interests are present.

> "The memorandum and Articles of Association of the Company may be amended either by a resolution of members or by a resolution of Directors".

> "The Fund will indemnify the Investment Manager or Any of its Partners, officers and employees with respect to any cost or expense arising from [. . .] losses due [. . .] to the negligence, dishonesty or bad faith of any employee, broker or other agent of the Investment Manager."

> "The organisational and initial offering costs of the Company are expected to amount to approximately US$200,000. Such costs will be paid by the Company out of the proceeds of the initial offering of shares."

Track record quantitative analysis

The existence of a successful investment track record is often a prerequisite to any hedge fund investment. However, the predictive power of past performance and its quantitative analysis is usually extremely limited, mainly for the following reasons:

- ❑ the number of data point is often too small to be statistically significant;
- ❑ the investment strategy is usually adapted and changed over time;
- ❑ the financial market conditions change and are cyclical; and
- ❑ short volatility risks have a low probability of occurrence.

Accordingly, the use of track record quantitative analysis should be limited to an *ex post* exercise where the aim is not to predict the future but rather to question the past.

Moreover, the track record should be subject to a qualitative analysis in order to define who is ultimately responsible for it, and in what organisational context and market condition it has been produced.

The analysis of the performance engine

The study of the investment strategy and the understanding of the factors that influence its success are central to investment selection. The search for returns implies the acceptance of some market and credit risks; these need to be identified and assessed through the study of the investment strategy.

Internal factors

The investment strategy deployed is influenced by factors such as asset types, asset size, funding cost, funding availability, information flow,

portfolio concentration and diversification, leverage, and exposure to market, volatility, and event risk, etc. These factors need to be identified and their impact on the performance assessed in order to understand the risks that have generated and influenced the performance. In this respect, the risk typology, which has been graphed above, should be used as the basis for this risk analysis.

The key factor, however, is the human one. There is no hedge fund without managers. At the end of the process the investment decision is a judgment and a vote of confidence on the ethics, skills and competitive advantages of a manager. In addition, the hedge fund investor has to recognise that it is unrealistic to expect to control 100% of the hedge fund portfolio activity. The best transparency level usually available takes the form of monthly or quarterly portfolio snapshots. Accordingly, the element of ethics and "trust" vis-à-vis the hedge fund manager is paramount.

External factors

External factors are related to market conditions and provide food to the investment strategy. These factors include market direction and level, sector rotation, volatility level, IPO activity level, market flows, demand and offer, credit spread fluctuation, M&A activity, default level, etc.

It is the review and understanding of the internal and external factors that will enable the hedge fund allocator to assess whether performance has been generated because of risk, skill or luck, and to determine the extent to which past performance has a chance to be repeated in the future. Coherence of the investment strategy, stability and repeatability of the process and sensitivity to external factors should be evaluated together for a judgment to be issued.

PORTFOLIO LEVEL RISK MANAGEMENT

The selection of an independent collection of adequate hedge funds and hedge fund managers is a necessary but incomplete condition of success. The key is to extend the process into the set-up of a coherent and balanced portfolio. Our portfolio level risk management is based on the following guidelines: bottom-up approach, seasoning process, concentration and diversification rules.

A bottom-up portfolio construction approach

Hedge fund investing boils down to selecting skill, competitive advantage and risk management. Accordingly, it is crucial to place the emphasis on the selection of good managers rather than adequate strategies. Of course, our experience has taught us to avoid or maintain reduced allocation to strategies which dangerously combine leverage and illiquidity, strategies that rely on misleading and inadequate accounting standards,

and strategies that tend to be short-event risk and/or volatility. But once these strategies are put aside, a bottom-up approach is critical because it helps us to avoid the temptation of filling in the pre-defined strategy allocation box with an average or poor quality manager. The corollary to this bottom-up approach is the acceptance of a running portfolio heavily allocated to US markets and US managers, overweighted in equity vis-à-vis fixed-income instruments and underweighted emerging markets.

Seasoning process

To build adequate portfolios of hedge fund investments, hedge fund allocators have to recognise and take into account the following in their asset allocation behaviour.

- ❑ The hedge fund mortality rate is high, especially in the early years of a fund.
- ❑ Hedge fund managers need to be given time to prove their competitive advantages.
- ❑ Asset allocators' understanding of strategies and managers increases if these are followed across a full market cycle.
- ❑ Early stage hedge fund investors run higher risks because of the additional business risks related to the start-up phase.
- ❑ Whatever the skill and experience of an asset allocator, he/she will continue to make mistakes.

We recognise these facts and have tried to take them into account in our portfolio construction guidelines. Accordingly, the portfolios we manage are structured into three different categories: farm team, intermediate and senior. The allocation will fall into one of these categories according to our subjective comfort level and knowledge of a manager and a strategy. At the farm team level, we find a large number of small allocations, while at the senior level, we have a limited number of large allocations. It will take, on average, at least four years for a manager to migrate from the farm team, through the intermediate category, to the senior level. The farm team should be limited to 15% of the portfolio, the intermediate section should be around 40% and the senior category should hold the remaining balance of the allocation.

Concentration and diversification rules

The maximum allocation to one single hedge fund should be defined according to the category the fund belongs to, the relative size of the hedge fund portfolio vis-à-vis the total wealth of the investor or family, and the risk tolerance/investment objective. The typical maximum allocation we use is 2%, 4% and 8% for the farm team, intermediate and senior category, respectively.

A more difficult question to answer as a hedge fund allocator is the adequate level of diversification (ie, how many hedge funds should be included in a portfolio?). The balance between diversification of risks and dilution of return is a subtle one. Typically, for a family who have a substantial allocation of hedge funds (above 40% of liquid assets), a total of 45 funds is often adequate. Of these, about 15 to 20 are usually in the farm team category.

The purpose is to go beyond the diversification of financial risks usually achieved with about 20 funds, and to take into account operational risks. These risks are extremely difficult to assess, and have disaster losses attached to them, although all have a low probability of occurrence. Accordingly, the maximum allocation to a single hedge fund is given by the answer to one simple question: "How much are we ready to lose should our maximum allocation suffer a 100% blow-up?"

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