

# Mitigating Hedge Funds' Operational Risks

Benefits and limitations of  
managed account platforms

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# Foreword



This study was initially developed to support Edhec's decision to collaborate with managed account providers in order to develop investable indices replicating the now widely adopted indices of indices (available on [www.edhec-risk.com](http://www.edhec-risk.com)). The outcome of the study convinced the Edhec Risk and Asset Management Research Centre that the benefits of managed account platforms clearly outweigh their cost and limitations, provided the infrastructure allows for the implementation of a systematic approach to measuring and managing financial risks and that the design of the platform allows for most operational risk factors to be substantially mitigated. As a direct consequence of this study,

the Edhec Risk and Asset Management Research Centre has selected Lyxor, part of Société Générale Group, as a strategic partner for the creation of its Hedge Fund Equity and Bond Diversifier Benchmarks. These are constructed with elementary components, the "investable indices", which are implemented with a selection of hedge funds available on the platform.

This study has since been revisited and expanded to cover all aspects of operational risk mitigation with managed account platforms.

**Noël Amenc,**

PhD, Professor of Finance, Director of the Edhec Risk and Asset Management Research Centre

A handwritten signature in black ink, appearing to read "Noël Amenc", with a large loop at the beginning and a long horizontal stroke extending to the right.

# About the Author



**Jean-René Giraud** is C.E.O. of Edhec-Risk Advisory, the consulting arm of Edhec's Risk and Asset Management Research Centre, where he is in charge of operational risk measurement and modelling research activities. Edhec-Risk Advisory provides a range of services aimed at supporting asset managers and their service providers in meeting the challenges that appropriate risk management represents. Jean-René is also a research associate with the research centre, focusing on extreme risks.

# Executive summary

Operational risk is by far the most complex and intriguing issue investors are dealing with when allocating capital to hedge funds. Due to sophisticated trading strategies, potentially high levels of portfolio turnover, investment in illiquid or difficult to price instruments and a moderately regulated environment, hedge funds tend to exhibit high levels of extreme risks related to non-financial events (fraud and misappropriation, misrepresentation, model risk, infrastructure risk, etc.).

The intention of this paper is to examine the expected benefits and limitations of hosting hedge funds on managed account platforms in order to minimise the level of non-financial risks.

The paper first examines the real extent of operational risks and the various factors that can explain the likelihood of certain funds ending up in situations where non-financial elements result in a collapse or a precipitated winding up. The study identifies governance, specifically the absence of independent

oversight, as the most important element to be considered prior to investing in hedge funds, since the majority of accidents can be related to one of the following factors:

- Position pricing & NAV calculation procedures
- Client reporting procedures
- Reconciliation capabilities
- Compliance controls
- Risk management infrastructure.

The paper then examines the various forms of managed account available to investors, from straight custodial arrangements to advanced managed account platforms offering a wide range of additional services such as independent valuation and risk monitoring.

Segregated or managed accounts have been designed by investors to achieve a higher level of protection against possible fraudulent activities that could take place within a hedge fund structured around a private partnership.

Given the wide range of services managed accounts and similar platforms can provide, it remains essential for the investor to clearly understand and verify the nature of the contractual arrangements between the management company and the service provider.

**Table 1:**  
Benefits range from basic segregation of assets to advanced independent risk controls

	Traditional private partnership	Standard custodial account	Prime-brokerage custody	Basic managed account	Advanced managed account
Segregation of assets			✓	✓	✓
Privileged redemption conditions				✓	✓
Elimination of misrepresentation risk		✓ <sup>1</sup>		✓	✓
Elimination of misappropriation risk			✓ <sup>2</sup>		✓ <sup>3</sup>
Elimination of mispricing risk					✓
Mitigation of other operational risks					✓ <sup>4</sup>

1. Only when independent reporting of assets is performed by the custodian bank directly to the investor.  
 2. Only when cash instructions are countersigned by the prime broker.  
 3. Only when the manager mandate can be withdrawn at any time.  
 4. Only when back office services are provided as part of the platform.

## Executive summary



No investor can expect to be fully insured against deliberate fraud or operational risks. It is however very important to stress that a managed account platform accompanied by terms and conditions that allow the risk management team to instantly cease the relationship with the manager and the use of a systematic and independent valuation and risk monitoring function can allow for severe curtailment of several sources of risk, which represent 85% of the hedge fund debacles analysed:

- Misappropriation: 30% of cases analysed
- Misrepresentation: 41% of cases analysed
- Trading outside of OM: 14% of cases analysed

Managed accounts, when accompanied by appropriate risk monitoring and adequate structuring of the relationship with the hedge fund manager today represent a very efficient

approach to mitigating operational risks, especially when the size of the investments does not allow for a dedicated operational due diligence and risk monitoring team to be set up.

By clearly containing the most important operational risks hedge fund investors may face, managed account platforms offer a level of protection that significantly reduces the selection risk involved in direct investments in hedge funds, allowing the fund of hedge fund manager, or the final investor, to focus investments and efforts on the asset allocation and manager selection phases of the investment process.

It becomes the investor's responsibility to carefully analyse the cost benefits of managed accounts in light of a complete analysis of the expenses related to implementing an infrastructure and investment environment offering similar levels of protection.

# Operational risks – the forest behind the trees

By their very nature, hedge funds allow the investor to be exposed to different risk factors such as volatility, counterparty, or liquidity risk. Exposure to these risk factors is not only a source of superior return-risk trade off but also the very essence of hedge funds' extensive diversification possibilities compared with traditional investments<sup>5</sup>. More importantly, it is interesting to note that the exposure to these risk factors is also a diversifiable risk, as it has been demonstrated that hedge funds exhibit low correlations amongst themselves<sup>6</sup>.

These advantages do not come without a downside. Gaining exposure to alternative risk factors usually requires trading activities that can be considered less conventional than in the long only universe. These include investments in illiquid instruments, potentially high portfolio turnover and non-vanilla OTC contracts. While these technicalities do not themselves represent an issue (the trading techniques of hedge funds usually originate at the desks of proprietary trading dealing rooms which have been operating under such constraints for years), they do however carry a level of operational risk for which the investor receives no premium.

It is interesting to note that the reporting on hedge fund risk exposure focuses on financial risks only, when it is not simply limited to volatility only. Recent studies such as the one conducted by Capco in 2002<sup>7</sup> show interesting results on the importance of non-financial risks within hedge funds. A key finding of the study is that operational risk greatly exceeds the risk related to the investment strategy,

with at least 56% of the hedge fund collapses (i.e. funds that have ceased operations with or without returning the capital to their shareholders) directly related to a failure of one or several operational processes.

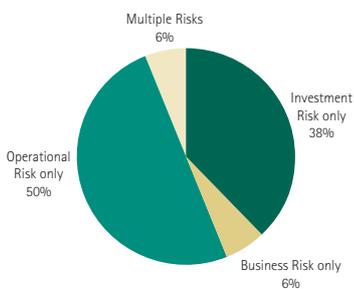
## The reality of hedge funds' operational risks

With an average of approximately 15 fund collapses per year<sup>9</sup> (to be compared to approximately 350 hedge fund closures per year<sup>10</sup>) out of a universe of a few thousand funds open to investment, it becomes clear that the risks related to the operational weaknesses of hedge funds significantly outweigh the levels of financial risks, which are usually the focus of managers' attention and investors' concerns.

Out of the 15 hedge fund failures, nearly two thirds can be considered fraudulent as, for example, the SEC has brought 51 cases against hedge funds over the last 5 years.

It is important to note that the analysis of historical data on hedge fund failures is rendered extremely difficult by the lack of transparency on the chain of events that leads to bankruptcy or closure. Not only is information not always publicly available as investors may choose private settlement to exit a difficult situation with a fund manager, when information is available, it is usually in the form of very controversial and even passionate debate. It can therefore not be considered excessive to assume that a significant percentage of the cases are not reported to the public.

Graph 1:  
Analysis of Hedge Fund Failures<sup>9</sup>



5. See Agarwal and Naik (2000) or Schneeweis and Spurgin (2000).

6. See M.W. Peskin, M.S. Urias, S.I. Anjilvel, B.E. Boudreau; "Why Hedge Funds Make Sense" (Morgan Stanley Dean Witter, November 2000) and Amenc, N., Martellini, L. and Vaissie, M. 2003, Benefits and Risks of Alternative Investment Strategies, *Journal of Asset Management*, Vol. 4, n° 2, p. 96-118.

7. Capco Research and Working Paper, "Understanding and Mitigating Operational Risk in Hedge Fund Investments", 2002.

8. Capco (2002) – Opus Cit. 7.

9. Edhec Risk and Asset Management Research Centre, based on publicly available information only.

10. Hennessee Group, 2005.

## Operational risks – the forest behind the trees

As an example, we can analyse the root causes of the ten most widely publicised failures of hedge funds. The following table shows these cases with very high level interpretation of what might have caused the failure. Information in this table is based exclusively on publicly disclosed information.

**Table 2:**  
Details of the ten most publicised hedge fund failures

Name	Year	Loss (estimates)	Overview
Long Term Capital Management (LTCM)	1998	\$4,000mn	Strategy failed to absorb post Russian debt default shock. Uncontrolled leverage, absence of transparency to prime brokers, conflicts of interest, model bias in the risk management process.
Tiger Management	2000	\$2,000mn	10% loss on a single day on trading activity, followed by a 23% loss in the value of the fund resulted in large redemptions bringing the total size of the fund from \$20,000mn down to \$8,000mn.
Everest	1998	\$1,300mn	Unfavourable market conditions and post Russian debt default shock.
Fenchurch Capital Management	1995	\$1,264mn	Change in investment strategy, absence of adequate risk management system for the new strategies.
Princeton	1999	\$1,000mn	Ponzi scheme, conflicts of interest and collusion with prime broker.
Beacon Hill	2002	\$1,000mn	Losses on directional bets, Mortgage Backed Securities pricing issues and lack of liquidity resulting in the need to stop redemptions and liquidate the fund.
Vairocana	1994	\$700mn	Directional bets instead of market neutral strategies, highly complex portfolios leading to difficulties in calculating the NAV.
Morgan Grenfell	1997	\$600mn	Unauthorised holdings of unlisted securities and pricing irregularities.
Manhattan Investments	1999	\$500mn	Trading losses and misrepresentation of fund performance.
Askin Capital Management	1994	\$420mn	Crash in the CMO market and weaknesses in the risk management system, very high leverage.

Source: Edhec Risk and Asset Management Research Centre, 2003; based exclusively on publicly available information.

A key point is that in eight out of ten cases (the exceptions being Tiger Management and Everest), operational weaknesses are the root cause of the failure or have prevented a fund from managing a crisis situation appropriately in an unexpected financial context.

While few funds fail purely because of an operational problem (such as a terrorist attack, a major settlement issue, a system breakdown or the loss of a key member of staff), it is easily understood that a weak operational environment will increase the impact of an external event such as tough trading conditions or brutal changes in financing conditions.

Similarly, while fraud is rarely the initial intention of a hedge fund manager, the complexity of the support infrastructure inherent in the trading activity, as well as the relative lack of maturity of the industry with regards to governance standards, provide many opportunities for operational risks that can only be mitigated by an appropriate and professional due diligence process on the investment pools.

In its recent survey on asset pricing and valuation practices<sup>11</sup>, the Alternative Investment Management Association provides a detailed insight on current hedge fund practices and governance standards. The survey conducted by AIMA has received responses from 92 organisations globally covering hedge funds, investors and service providers (such as administrators, prime brokers and back office providers).

In this survey, AIMA highlight the fact that while 73% of hedge fund respondents have an independent administrator, 27% of the funds may have provided prices to their administrator on occasion for NAV purposes while 36% of respondents recognise that they override prices provided by their administrator.

Additionally, the survey reflects the fact that fewer than 40% of hedge funds have a documented pricing policy for fund investments and that fewer than 20% of the firms have constituted a "fair value" committee.

AIMA concludes the report with a series of practical recommendations with a view to increasing the common understanding and approaches taken to pricing and valuation, and enhancing existing practices and procedures within the industry.

11. Asset Pricing and Fund Valuation Practices in the Hedge Fund Industry, AIMA, April 2005.

## Operational risks – the forest behind the trees

The recent institutionalisation of the industry has allowed the quality of the operational infrastructure supporting hedge fund operations to be significantly enhanced. Development of prime brokerage technology, the growing success of back office providers and the significant growth of independent administration all contribute to minimising the level of operational risk embedded in hedge fund investments.

However, the massive inflow of new capital and the continuing growth of the industry are also increasing the number and impact of fraudulent or operational losses. The five cases described in Table 3 all relate to hedge funds that are being investigated over the four first months of 2005.

**Table 3:**  
Recent hedge fund investigations

Name	Misdemeanour
KL Group LLC	Allegedly sending false account statements to investors showing similar gains while suffering tremendous trading losses
Phoenix Kapitaldienst (Germany)	Alleged manipulation of account statements, feigning assets
Vision Fund LP/ DEN Ventures	Allegedly falsifying investment returns and taking unearned incentive payments based on inflated results and extracting capital for personal use
North Shore Asset Management	Alleged diversion of funds to invest them in illiquid securities of entities in which they had a stake
Portus Alternative Asset Management (Canada)	Alleged unconventional sales and compliance practices as well as allocation of assets and promises of principal-backed guarantees.

Source: Edhec Risk and Asset Management Research Centre, based on publicly available information.

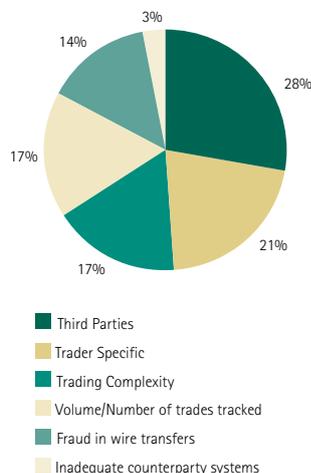
It is interesting to see that most cases investigated so far relate to suspected fraudulent activities, confirming the fact that the operational infrastructure is improving significantly overall while the industry is still looking to protect itself against deliberate fraud.

### Understanding the key operational risk factors

Mercer Oliver Wyman have analysed the origins of hedge fund failures and report that nearly 30% of these failures can be related to issues involving third parties, while the trading complexity and/or volume traded can represent up to 34% and trader implication can be clearly identified in only 21% of the cases.

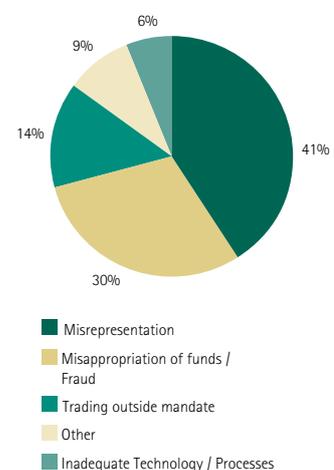
Capco's study on hedge fund failures provides more insight into the form hedge fund operational weaknesses can take and identifies fraud (misappropriation and deliberate misrepresentation) as the most prominent factor for hedge fund collapse.

**Graph 2:**  
Understanding the sources of operational risks<sup>12</sup>



12. Mercer Oliver Wyman, Risk magazine, 2004.  
13. Capco (2002) – Opus Cit. 7.

**Graph 3:**  
Details on Operational Failures<sup>13</sup>



## Operational risks – the forest behind the trees

Trading outside the mandate is a situation that can be witnessed in a growing number of cases. Due to significant capital inflows and a diminution of trading opportunities, managers might want to expand the scope of their trading activities and attempt to generate returns on new strategies which have not been clearly documented to the investors. While these initiatives correspond to a respectful desire to perform most of the time, they nonetheless carry a serious level of risk as the organisation (from a human, technology and operations standpoint) might not be prepared to support and monitor these trading strategies effectively.

Misappropriation occurs when the management company, the general partners, or any employee of the firms deliberately divert assets from the fund. Such direct and deliberate fraud might occur at two levels:

- from the inception of the fund, in which cases we can witness that assets provided by investors might not even reach the fund's accounts;
- by diversion of capital through basic transfers or checks, or unauthorised trading activities with accomplice third parties (e.g. investments in companies where funds can easily be diverted).

Misrepresentation comprises all cases where the manager has deliberately modified the information to the final investors on the real situation of their assets. Misrepresentation can take numerous forms:

- Modification of audited accounts or statements provided from the administrator/ prime broker.
- Deliberate incorrect marking of securities to inflate the fund's performance.

In most of the cases studied, misrepresentation occurred either to hide trading losses (very often in the hope to recoup later on) or to protect the level of variable fees generated on the basis of the fund's performance.

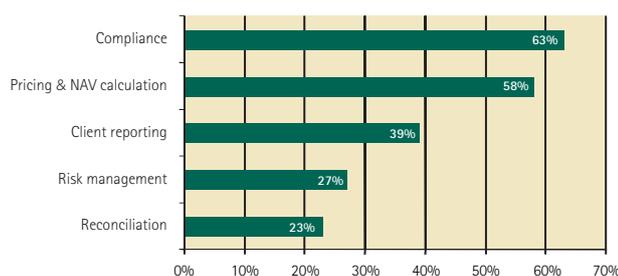
While misappropriation, misrepresentation and deliberate fraud constitute the main sources of operational issues that can explain hedge fund failures<sup>14</sup>, these issues are only made possible by the limited regulatory constraints hedge funds face and the lack of maturity of the industry with regard to operational practices, especially in relation to:

- Compliance controls.
- Position pricing & NAV calculation procedures.
- Client reporting procedures.
- Risk management infrastructure.
- Reconciliation capabilities.

The relative operational weaknesses of hedge funds have been analysed and show the importance of compliance controls; pricing and Net Asset Valuation; and client reporting, as the three main sources of operational failures.

This analysis confirms the importance of adequate operational due diligence prior to investing in a hedge fund and the need for formal procedures and methods in order to ascertain the level of operational risk, so as to allow for the construction of an optimal hedge fund portfolio.

Graph 4:  
Percentage of hedge funds potentially open to specific operational issues<sup>15</sup>



14. Capco (2002) – Opus Cit. 7.

15. The Management of Hedge Funds' Operational Risks, Jean-René Giraud, *Hedge Funds Review*, July-September 2004.

## Operational risks – the forest behind the trees

### Compliance with the offering memorandum

Hedge funds are usually constituted as private partnerships whereby a mandate is given to the general partners to take responsibility for managing the fund's assets in accordance with the fund's offering memorandum. This memorandum stipulates the nature of the trading activities (in terms of investment strategy, asset classes, leverage and levels of risks) that the manager is entitled to carry out. Controlling compliance with the offering memorandum represents a very complex challenge for existing and future investors for several fundamental reasons:

- Remaining tendency of certain managers to be reluctant to disclose the investments carried by the fund to protect their "trading secrets";
- Absence of systematic independent control of the limits imposed by the offering memorandum by an independent third party on behalf of the investors (when an independent administrator is mandated, the mandate is issued by the firm's board of directors);
- Periodicity of audits carried by external auditors resulting in the analysis of end-of-year or end-of-quarter holdings which might have been adjusted for temporary deviations from the mandate.

### Pricing and valuation of hedge fund holdings

While mainstream hedge fund strategies rely nearly solely on equities and bonds to achieve their investment goals, due to the very nature of their trading activities, some hedge funds tend to be significantly invested in non-

traditional securities such as asset-backed securities, Over The Counter swaps and illiquid securities (distressed, emerging markets).

This situation has led to some confusion about the importance of pricing and valuation as a factor for hedge fund failures.

While it is true that recent highly publicised cases of hedge fund debacles find their origins in asset pricing and valuation issues, one needs to remain clear about the use of such instruments in hedge funds. Arbitrage trading activities, distressed investments and other common strategies rely solely on the existence of price inefficiencies in the market. It is therefore not surprising to find that hedge funds deliberately invest in illiquid or difficult-to-value instruments. This situation is not an issue in itself and should be compared to a similar situation in, for example, the private equity world rather than being compared to long-only investment strategies.

However, while pricing irregularities are at the root of the trading activity, and probably one of the sources of a different risk/return profile, it would probably be better for the investor to focus on investigating the various governance issues hedge fund organisations face, issues that allow pricing and valuation to become one source of misconduct or undesired debacles.

Managing a portfolio of hard-to-price investments is not new. Private equity firms, investment banks and other large institutional investors have long been involved in such activities. What remains important is that the investor needs to receive an indisputable commitment that price inefficiencies will not

## Operational risks – the forest behind the trees



be used against his own interest. A majority of hedge funds describe their pricing policy for difficult-to-price instruments either in the offering memorandum or in a dedicated associated documentation. The policy can involve fair value pricing (by a committee dedicated to analysing specific holdings, by statistical methods or by the constitution of a consensus amongst third parties). The independence of this policy from the management of the firm in charge of the day-to-day management of the assets is an essential component of better governance practices.

Similarly, if the development of independent third party administration in charge of establishing a regular NAV is a very positive step towards better practices, the fact that the majority of fund managers remain involved in the marking of these specific hard-to-value assets under the pretext that they know the market better than back office clerks should remain a major concern to all investors. Today's situation cannot be considered satisfactory, with a mere 27% of hedge funds still providing prices to the administrator for NAV purposes, when 36% of the funds happen to override prices provided by the administrator.<sup>16</sup>

### Reporting to the investors

Investor reporting lies at the heart of nearly all fraudulent hedge fund schemes. What a terrible challenge for a manager who finds himself in a difficult situation having lost an investor's money not to be tempted to adjust performances either to protect a performance fee payment or simply to remain in operation in the hope that time will allow the market to bring him out of the turbulence.

16. AIMA (2005) - Opus Cit. 11.

Investors remain heavily dependent on the willingness of the managers to provide interim performance figures. Auditors visit the fund once a year; there is more than enough time between two visits for a fund to collapse.

Here again, investors may have to accept a certain level of uncertainty while some strategies take time to unwrap and deliver the expected benefits. Investors in FTSE100 stocks do not receive a daily valuation of the company they invest in. However, unlike hedge funds, FTSE100 companies do provide regular accounts that are thoroughly reviewed by independent auditors, unless suspicion is immediately raised.

### Risk management

Risk management is a core element of successful hedge fund operations. As the majority of hedge fund strategies are based on statistical arbitrage, short term bets and over-concentration in these bets through leverage, the management of downside risk is essential for the long-term success of the fund.

While most hedge fund managers implement sophisticated risk management techniques and tools to monitor their portfolio, the main concern investors should have with regards to the risk management function remains its strict separation from the management function.

This strict separation is not only necessary to avoid the temptation to by-pass risk measures and continue to take on additional risk in the hope to succeed in a given strategy, but more importantly because an overly close relationship between the risk function and the

## Operational risks – the forest behind the trees



management function can result in significant side effects, like those witnessed during the collapse of LTCM, for example.

Using the same models for risk measurement and management purposes leads to a considerable increase in the exposure. Models are designed to capture the factors that explain the fund's performances statistically. If a fund is optimised under the same risk constraints as those that are used to monitor its exposure, the risk exists that, in order to improve performance, leverage is increased to very high levels (under a fair view that risk levels are low). In the event that the risk models have not captured the right factors or specifically do not provide a good representation of the risks in certain market conditions, the fund might find itself in a position where it cannot liquidate without incurring severe losses.

### Reconciliations with third parties

With the multiplication of third parties (brokers, prime brokers, providers of financing, administrators, back office processing providers, external risk management), managing data flows has become a significant challenge for hedge funds' operational teams.

With investments covering assets on a global basis, multiple data reconciliation issues arise with trades, pending trades, settlement, securities, prices and other key constituents of the portfolio.

As such, reconciliation can be considered one of the most important constraints on hedge fund operations and a source of mistakes.

Reconciliation involves the independent control of transactions, positions, marks and cash flow that are generated/booked at various levels of the organisation.

# Mitigating hedge funds' operational risks



Operational risks represent the most publicised form of extreme risks hedge fund investors may be facing and therefore represent a significant threat to institutional investors, for whom being associated with a widely publicised collapse could result in significant loss of reputation.

Along with substantial assets to be managed, institutional investors bring with them specific requirements that are forcing the industry to slowly re-shape itself around better and more professional practices.

These practices tend to be related to the two most important areas of the investment process in hedge funds:

- On the investor's side, increased levels of due diligence that include a thorough review of the operational capabilities.
- On the hedge fund side, in order to comply with more demanding due diligence, hedge funds are pushed to segregate the most important responsibilities that they assume as a professional organisation, namely administration, risk control and operations.

## Operational due diligence

The very concept of investor due diligence lies at the heart of the investment process in hedge funds. Similarly to private equity firms, investors and funds of hedge funds are handing out large sums of capital to firms that have not reached the level of institutionalisation and regulatory oversight of the mutual fund industry. It is for example not uncommon to invest a substantial share of the capital managed by a three-person hedge fund based offshore with the sole contract being a private partnership agreement.

Good practice in such situations requires the investment firm to carry out thorough due diligence on the target hedge fund and associated management team in order to assess:

- the viability and persistence potential of the trading strategy which needs to remunerate the risks taken;
- the sustainability of the operations supporting the trading strategy;
- the ability of the hedge fund to operate as a firm and manage the associated challenges (growth, technology, retention of key personnel, etc.).

It has however to be said that until very recently, hedge fund due diligence usually merely constituted a background check on the manager and the management team (qualifications, possible involvement in past criminal cases, exchanges with past employers or co-investors, etc.), a visit to the firm to assess the reality of the infrastructure and a more or less detailed review of specific items related to the trading methodology and/or the operational support.

The development of institutions managing larger funds of hedge funds has allowed the industry to enhance the approach to conducting due diligence and, more specifically, to address the question of operational risks as a key item on the agenda. Advanced reviews including thorough visits and discussions with the prime broker, the administrator and a full review of the systems and processes supporting the trading strategy are now the norm in most large institutions.

Similarly, specialised advisory firms have developed sensible services to support the selection process from an operational

## Mitigating hedge funds' operational risks



perspective. It is however true that no industry-accepted solution is currently addressing the question in its full extent at a reasonable cost as it was found that conducting operational due diligence (internally or in an outsourced model) is still a financial hurdle for funds managing less than £200mn (average cost estimated at 30bps<sup>17</sup> for a fund investing in 40 underlying vehicles).

### Independent administration

Fully independent administration of hedge funds is proving to be more and more popular within the alternative investment community. While administration was recently restricted to corporate responsibilities only (management of investors' shares, subscriptions & redemptions, books and records), the responsibilities administrators are willing to take on board are increasingly moving towards a full range of services, including full valuation of the funds, reporting to investors and provision of risk monitoring services.

Administrators are currently prepared to take full responsibility for setting up the fund structure, proposing appropriate channels into prime brokers and executing brokers, liaising with law firms for handling all contractual material and ensuring proper valuation of the funds is made on behalf of the management company.

However, outsourcing the administrative functions does not alter the fact that the board of directors has final responsibility for all issues related to the assets and liabilities of the funds. It is therefore not surprising to see that even though most hedge fund managers

are choosing reputable firms to handle their administration, the role of the hedge fund manager himself in the valuation of the portfolio can remain very important (marks provided to the administrators for illiquid positions, or NAVs altered before being sent to the investor to reflect a fair value that only the manager is in a position to assess).

For independent administration to be more than a marketing ploy and provide the full extent of benefits investors can expect, three criteria have to be fulfilled in the contractual arrangements:

- Valuation of the fund completely independent of the manager. Where required the administrator may turn to third parties that are not involved with the fund as counterparties or brokers. When specific positions cannot be independently priced, estimates provided by the hedge fund manager should be used only when the investor is informed of the percentage of assets valued directly by the hedge fund manager;
- Reporting of the NAV and the shares issued is to be controlled by the administrator and communicated independently to the final investors;
- The administrator is in a position to review the actual assets of the funds held with the prime broker or the custodian bank, and provide independent control of the investment limits imposed on the fund by the offering memorandum (actual instruments traded, limits, leverage, etc.).

Today, the various regulatory environments hedge fund managers operate in do not allow the role of the administrator to be clearly defined and harmonised. It remains therefore extremely important for investors to carefully

17. The Management of Hedge Funds' Operational Risks, Jean-René Giraud, *Hedge Funds Review*, July-September 2004.

## Mitigating hedge funds' operational risks



review arrangements with third parties and measure the extent of responsibilities the administrators have accepted.

### Independent risk control

As we have seen before, an appropriate measure of the risks taken by the hedge fund manager ought to be dissociated from the risk management function, which usually forms an important pillar of the investment strategy. Since the risk factors involved in hedge fund investments cover the entire spectrum of financial risks traders can face, and given the considerable capital required to develop state-of-the-art risk measurement tools, the industry has witnessed significant growth of independent risk control providers. Based on established models and tools usually created to support proprietary trading desks, these players provide an independent review of the risk exposures the portfolio is exhibiting.

Independent risk control usually encompasses three major domains:

- assessment of "normal" risks (VaR, greeks, etc.);
- assessment of extreme risks (B-VaR, scenarios);
- assessment of the limits defined within the offering memorandum (leverage, concentration, diversification, etc.).

These controls require position-level data about the hedge fund's assets and can be reviewed without disclosing these positions to the prime broker or other sensitive parties.

### Operations outsourcing

In order to operate in global markets and across multiple asset classes, hedge funds may require significant investment in back office technology, operations and people. The area of back office operations tends to be considered as a pure cost centre by most traders, who consider these functions as basic support functions. Similarly to the proprietary trading environment, it has become clear to most institutions that, while back office operations do not strictly create value, poor operations might result in important financial leakage and may even carry a significant level of extreme risks.

Due to high leverage and considerable portfolio turnover, failure to settle trades correctly or process corporate actions in a timely manner can result in the complete loss of the performance generated by the investment strategy or an increase in undesired exposure to market or credit risk.

Controlling back office operations costs is also considered a main concern for most small firms, who do not have the capital to support streamlined operations.

In this context, the industry has seen a significant development of services offering full back office capabilities in exchange for a fee based on assets under management.

In the case of prime brokers or administrators, the service usually comes as a premium on existing services and allows the hedge fund to find all required support within one place

## Mitigating hedge funds' operational risks



(incidentally, it also allows the prime broker to effectively monitor the risk taken in financing the fund and ensuring capital is allocated under strict control).

Most providers of back-office services are leveraging their strong position (access to the entire holdings of the portfolio, intraday trade capture) to associate advanced services to the standard settlement and accounting services offered:

- on-line and real time reporting (to the managers, the administrators and the investors);
- advanced risk measurement systems (intra-day and end of day);
- direct connectivity to prime brokers and administrators for advanced reconciliation capabilities;
- cash management services (FX, financing, stock borrowing and lending, etc.).

These services come at a cost but allow the hedge fund manager to focus on the investment strategy while delegating a substantial share of the operational issues to an independent third party.

# Benefits and limitations of managed accounts



One of the most important developments surrounding the hedge fund industry with regards to organisation and practices is probably the strong interest private and institutional investors have shown in the concept of "managed accounts".

In a desire to add an additional level of protections, investors with significant assets to manage have asked hedge fund managers to replicate their trading strategy outside of the fund's books but instead in an account that remains in the name of the investor.

- Basic managed accounts: assets are held in the name of the investor within the books of a custodian bank and the manager receives the right as part of his management mandate to operate the account. The bank has no duty of control on the assets held, nor on the investment decisions, but reporting independent from the manager can be issued by the bank directly to the investor;
- Managed account platforms: assets are held in the name of the investors in a segregated account and the bank operates back office and risk control functions on behalf of the board of directors of the hedge fund.

## Principles

This concept of "managed accounts" has been derived in numerous forms that offer different features:

- Standard custodial arrangements: assets are held in the name of the fund in a dedicated account operated by the manager of the hedge fund;
- Prime brokerage custody: assets are held in the name of the fund in a dedicated account operated by the manager, the bank can act as an independent provider of controls on behalf of the board of directors;

It is important for investors to identify the contractual arrangements the fund has taken with its custodial bank in order to assess the level of protection and independence it will benefit from with the "managed accounts".

Illustration 1 represents the structure implemented in advanced managed account structures.

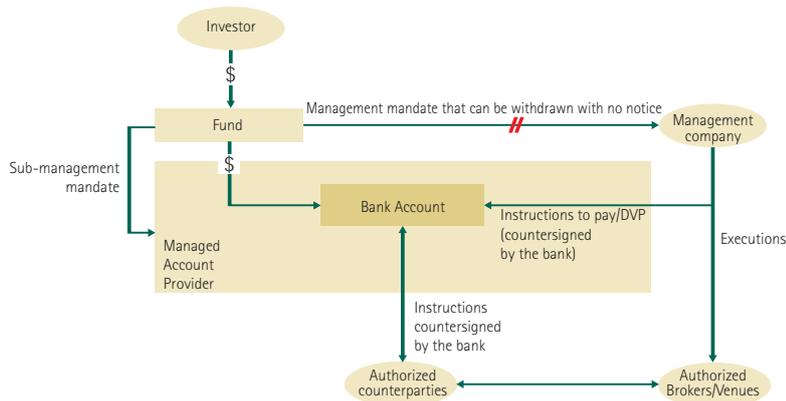
## The role of the prime broker

Managed accounts should not be confused with prime brokerage, which represents a very important dimension of the hedge fund industry.

Prime brokers have developed on the back of hedge fund growth over the last five years as a single source of services for hedge funds willing to consolidate their brokerage and banking relationships in a single place.

The prime broker can be defined as the primary point of contact for a hedge fund and the traditional source of financing for leverage and short selling. Trades executed

Illustration 1:  
Organisation model of an advanced managed account platform



## Benefits and limitations of managed accounts



with "executing brokers" are "given up" after execution and passed electronically to the prime broker who will be in charge of ensuring that post trade (matching, settlement and payments) is handled in a single location. The benefits of such a model are numerous and range from a high level of transparency of the funds (supposedly held with one prime broker), rationalisation of back office operations with one firm, possibility to benefit from prime brokerage technology (trading, risk management, reporting) and financial services (cross product margining, leverage, stock borrowing and lending).

While the concept of prime brokerage has been a true success story both for the clients (one-stop services with considerable technology made available at no capital cost) and the provider (better assessment of credit risk involved in hedge fund financing, leveraging of services traditionally delivered within product silos allowing for unlimited cross selling), the reality is that a significant number of hedge funds have decided that there is no "prime" in prime brokerage and that ensuring a long-term relationship with several brokers would allow them to keep a better control on their sources of financing and execution services.

### Limitations and constraints

Managed accounts are often cited as the panacea when it comes to investor protection, but one should not overestimate the benefits of such platforms as the extent of the protection is highly dependent on the nature of the platform and the infrastructure supporting the trading activity.

A basic managed account platform will indeed provide the investor with independent access to underlying holdings and potential privileged redemption conditions (assets on the account can supposedly be liquidated at any time by the investor). The monitoring of security level positions remains however a challenge in itself. Due to the complexity of the trading strategies, understanding the risks posed by the positions observed on the managed account might lead to over or under estimation of the exposures and can lead to erroneous decisions to liquidate or limit the manager's freedom at the expense of performance. Similarly, assessing these positions on a daily or even weekly basis requires a substantial understanding of the instruments traded and might result in an operational headache (clerical function requiring PhD staff!!!).

Similarly, in order to fully assess the exposure of the funds, the investor or their representative will be forced to price every single security, requiring a level of operations similar to a full back office processing centre or administrator.

Such monitoring probably requires a certain level of automation which can only be effective and cost efficient when organised for a large number of managed accounts, in a similar way that proprietary trading accounts are monitored within investment banks.

A significant element of protection in managed accounts comes from the limitation set on the manager to access the assets of the accounts. In full delegation, the manager may be entitled to execute and settle directly with trading counterparties. Such a situation would allow the manager to engage in OTC contracts that are not authorised under the

## Benefits and limitations of managed accounts



conditions of the offering memorandum, or more simply to transfer funds as part of a misappropriation scheme. It is therefore extremely important to ensure that trades impacting upon the cash or securities positions require countersigning by the depositary or the bank in charge of the managed account. Such a level of control will however require the list of counterparties, executing brokers and prime brokers to be clearly restricted and all parties informed of the authorised counterparties.

### Benefits

Segregated or managed accounts have been designed by investors to achieve a higher level of protection against possible fraudulent activities that could take place within a hedge fund structured around a private partnership.

Advanced managed account platforms that provide the full range of middle and back office services, alongside independent valuation and risk monitoring with contractual arrangements favouring stringent control of the hedge fund manager's operations can therefore be considered the most secure environment.

No investor can expect to be fully insured against deliberate fraud or operational risks. It is however very important to stress that a managed account platform accompanied by terms and conditions that allow the risk management team to instantly cease the relationship with the manager, and the use of a systematic and independent valuation and risk monitoring function can allow several sources of risks that have caused hedge fund debacles to be restricted:

- Misappropriation: 30% of cases analysed
- Misrepresentation: 41% of cases analysed
- Trading outside of OM: 14% of cases analysed

It would be erroneous to believe that all cases could be avoided within a managed account environment as the complexity of some strategies may involve very difficult or unexpected situations occurring (for example market conditions leading to pricing and risk models not being applicable) but the regular stress tests and privileged terms and conditions will certainly allow the investors to recover with significantly less damage than direct investors.

**Table 4:**  
Benefits range from basic segregation of assets to advanced independent risk controls

	Traditional private partnership	Standard custodial account	Prime-brokerage custody	Basic managed account	Advanced managed account
Segregation of assets			✓	✓	✓
Privileged redemption conditions				✓	✓
Elimination of misrepresentation risk		✓ <sup>18</sup>		✓	✓
Elimination of misappropriation risk			✓ <sup>19</sup>		✓ <sup>20</sup>
Elimination of mispricing risk					✓
Mitigation of other operational risks					✓ <sup>21</sup>

Given the wide range of services managed accounts and similar platforms can provide, it remains essential for the investor to clearly understand and verify the nature of the contractual arrangements made between the management company and the service provider.

18. Only when independent reporting of assets is performed by the custodian bank directly to the investor.

19. Only when cash instructions are countersigned by the prime broker.

20. Only when the manager mandate can be withdrawn at any time.

21. Only when back office services are provided as part of the platform.

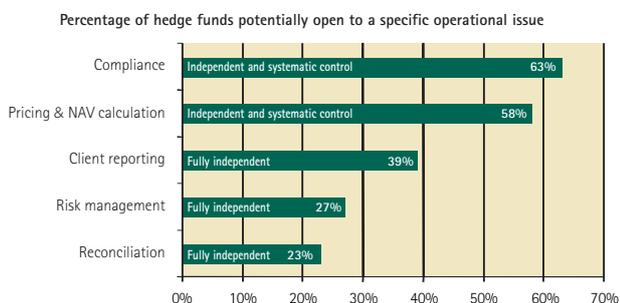
## Benefits and limitations of managed accounts



Since an advanced managed account platform structure addresses the most important risk factors identified in hedge fund debacles (fraudulent or not), the infrastructure is certainly a key element to be investigated when entering the hedge fund market.

In these circumstances, Edhec has selected the Lyxor platform for the implementation of the Edhec Hedge Fund Equity and Bond Diversifier Benchmarks based on a series of investable indices constructed with a selection of funds available on the platform. The major benefit of such an agreement is to mitigate the level of operational risks involved with a portfolio of hedge funds and optimise the infrastructure required to support a systematic approach to risk monitoring.

**Graph 5:**  
Funds open to specific operational risk factors<sup>22</sup>



22. The Management of Hedge Funds' Operational Risks, Jean-René Giraud, *Hedge Funds Review*, July-September 2004.

# Conclusion



In this paper, we have analysed the main sources of hedge fund failures, notably in the operational area. A detailed analysis of past causes of failures clearly identifies operational weaknesses as the main source of hedge fund default.

Managed accounts, when accompanied by appropriate risk monitoring and adequate structuring of the relationship with the hedge fund manager today represent a very efficient approach to mitigating operational risks, especially when the size of the investments does not allow for a dedicated operational due diligence and risk monitoring team to be set up.

By clearly containing the most important operational risks hedge fund investors may face, managed account platforms offer a level

of protection that significantly reduces the selection risk involved in direct investments in hedge funds, allowing the fund of hedge fund manager, or the final investor, to focus investments and efforts on the asset allocation and manager selection phases of the investment process.

It becomes the investor's responsibility to carefully analyse the cost benefits of managed accounts in light of a complete analysis of the expenses related to implementing an infrastructure and investment environment offering similar levels of protection.

## The Lyxor approach to offering managed accounts

With more than \$23.7 billion of alternative assets under management and 813 funds of hedge funds, Lyxor has entered the exclusive club of the 10 largest alternative multimangers.

The success of Lyxor is clear confirmation that the business and operational model selected by the firm from its inception has been widely recognised as an example for the industry.

Lyxor is running a dedicated managed account platform on which more than 150 hedge fund managers have been invited to manage assets in parallel with their mainstream hedge funds.

Part of the Société Générale Group, Lyxor is actively involved in the control of the managed account platform on behalf of investors, but also under stringent financial and operational risk constraints, as 80% of Lyxor's assets are involved in some form of structuring by the mother group.

Lyxor's value proposition relies on four major pillars:

- Specific terms and conditions for setting up the managed accounts (including trading limits);
- Independent valuation and administration of the funds;
- Independent risk monitoring of the individual portfolios with full transparency;
- Independent reporting cycle from the management.

These pillars represent what can be considered today as a state-of-the-art infrastructure for the operational management of managed accounts and allow investors to focus on the key driver for performance: the quality of portfolio management.

### Specific terms and conditions for setting up the managed accounts

The terms and conditions that regulate the relationship between Lyxor (a fully regulated asset management company), the fund manager, the fund itself and its shareholders have been specifically designed to allow for the greatest level of investor protection.

The process starts with investors identifying a specific hedge fund manager and being willing to invest in the strategy in the context of a managed account platform.

During a thorough initial due diligence executed by a dedicated team within Lyxor, various elements related to the strategy and its implementation are collected:

- securities, instruments and market traded;
- transacting counterparties;
- executing brokers and prime broker(s).

Funds are deposited by the investors in the bank's accounts in the name of a fund listed in Dublin of which investors are shareholders. Lyxor is sub-manager for the funds and a mandate is given to the hedge fund manager whose strategy will be replicated in the fund. This manager receives a management mandate (the Trading Advisory Agreement, TAA) which can be withdrawn without any notice by Lyxor. This very unique relationship has proven to be decisive in a recent hedge fund debacle where Lyxor has been in a position to take control of the funds and manage a proper liquidation while investors in the master fund were locked in and under the control of the manager.

The mandate clearly defines the constraints under which transactions can be carried out with the funds deposited on the managed account. These constraints are naturally derived from the initial due diligence, provided they are deemed acceptable by Lyxor. Initial constraints identified during the preliminary due diligence phase are turned into a risk budget that can be monitored on a weekly basis by Lyxor's risk control

## The Lyxor approach to offering managed accounts

team. As such, the manager will have the possibility to transact in exactly the same way on the managed account platform as within his own fund with a pre-defined level of risk budget calculated and agreed by Lyxor.

Terms and conditions restrict cash and securities movements impacting the managed account platform to being initiated by Lyxor only. All trades are deemed DVP (Delivery versus Payment). When circumstances do not allow such a settlement mechanism (IPOs for example), cash transfers require signature by authorised Lyxor signatories.

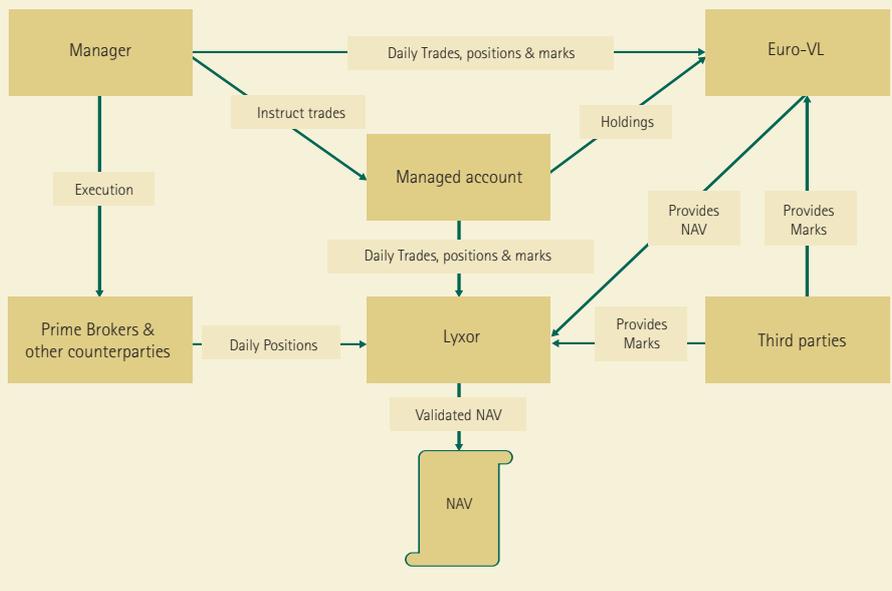
The initial due diligence process also allows Lyxor to clearly identify all accepted counterparties, which will then be documented in the Trading Advisory Agreement in order to ensure that no transaction is made with unauthorised parties either by mistake or deliberately. Similarly, identifying prime brokers and OTC counterparties upfront will allow Lyxor to negotiate strict Service Level Agreements with these counterparties. With over 150 funds on the platform, Lyxor is now benefiting from a privileged relationship with the most important prime brokerage firms and OTC counterparts globally.

### Independent valuation and administration of the funds

With the support of an independent valuation team and the delegation of the NAV calculation to the Société Générale subsidiary Euro-VL and IFS, Lyxor finds itself in a unique position to independently monitor the valuation process both from the administrator and the manager standpoints.

Lyxor's operations team sits in the middle of a fully independent valuation process which guarantees that valuation is performed by an independent administrator while also being in a position to independently statute on issues such as fair valuation. This is a unique approach where a fully independent body supersedes the administrator and the manager in the constitution of a fair NAV in the sole interest of the final investor.

Illustration 2: Independent valuation



## The Lyxor approach to offering managed accounts

### Independent risk monitoring of the individual portfolios with full transparency

Lyxor's approach to monitoring risk is based on three guiding principles:

- full independence of the risk monitoring function from the manager with a possibility to interrupt the relationship with the manager without any notice in the event of breach of trading limits;
- application of the limits, metrics and scenarios used at group level to monitor the bank's trading activities;
- systematic approach to monitoring risk based on the measurement of a risk level to be compared to a risk budget determined during the due diligence process.

Breaches of the risk budget can occur in two situations, active (result of an investment decision taken by the manager) or passive (resulting from variations in market conditions).

In the first case, Lyxor will be alerted and the risk management team will liaise with the manager in order to resolve the situation and immediately reduce the level of risk. In the case of a passive breach, Lyxor's team will inform the manager and liaise in order to define a strategy to bring the level of risk within the agreed budget as soon as possible.

The computation of the risk consumption includes a permanent control of compliance with all trading limits (amongst others, leverage, concentration, geographical exposure, volatility, interest rates and credit spread sensitivity, authorised instruments, authorised counterparties, etc.) and systematic stress testing of the portfolio in group-defined scenarios.

### Reporting cycle independent from the management

The unique setup of the relationship between the manager, the administrator and Lyxor allows the firm to fully and independently provide a detailed report on the fund's NAV as well as a comprehensive set of statistics and the main risk factors with amongst others, sector, geographical, capitalisation and equity exposure. This reporting cannot be biased by the manager either directly (misrepresentation of assets or holding values) or indirectly (provision of incorrect marks to the administrator). Reports are sent directly to the investors by Lyxor.

# About the Edhec Risk and Asset Management Research Centre

Edhec is one of the top five business schools in France owing to the high quality of its academic staff (over 100 permanent lecturers from France and abroad) and its privileged relationship with professionals that the school has been developing since it was established in 1906.

Edhec Business School has decided to draw on its extensive knowledge of the professional environment and has therefore concentrated its research on themes that satisfy the needs of professionals.

Edhec is one of the few business schools in Europe to have received the triple international accreditation: AACSB (US-Global), Equis (Europe-Global) and AMBA (UKGlobal).

Edhec pursues an active research policy in the field of finance. Its "Risk and Asset Management Research Centre" carries out numerous research programmes in the areas of asset allocation and risk management in both the traditional and alternative investment universes.

## The choice of asset allocation

The Edhec Risk and Asset Management Research Centre structures all of its research work around asset allocation. This issue corresponds to a genuine expectation from the market. On the one hand, the prevailing stock market situation in recent years has shown the limitations of active management based solely on stock picking as a source of performance. On the other, the appearance of new asset classes (hedge funds, private equity), with risk profiles that are very different from those of the traditional investment universe, constitutes a new opportunity in both conceptual and

operational terms. This strategic choice is applied to all of the centre's research programmes, whether they involve proposing new methods of strategic allocation, which integrate the alternative class; measuring the performance of funds while taking the tactical allocation dimension of the alphas into account; taking extreme risks into account in the allocation; or studying the usefulness of derivatives in constructing the portfolio.

## An applied research approach

In a desire to ensure that the research it carries out is truly applicable in practice, Edhec has implemented a dual validation system for the work of the Risk and Asset Management Research Centre. All research work must be part of a research programme, the relevance and goals of which have been validated from both an academic and a business viewpoint by the centre's advisory board.

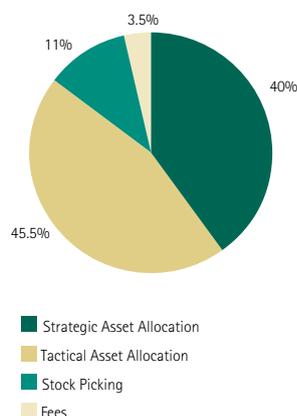
This board is made up of both internationally recognised researchers and the centre's business partners. The management of the research programmes respects a rigorous validation process, which guarantees both the scientific quality and the operational usefulness of the programmes.

To date, the centre has implemented six research programmes:

### Multi-style/multi-class allocation

This research programme has received the support of Misys Asset Management Systems, SG Asset Management and FIMAT. The research carried out focuses on the benefits, risks and integration methods of the alternative class in asset allocation. From that

Graph 5:  
Percent of variation between funds



Source: Edhec (2202) and Ibbotson, Kaplan (2000).

## About the Edhec Risk and Asset Management Research Centre

perspective, Edhec is making a significant contribution to the research conducted in the area of multi-style/multi-class portfolio construction.

### Performance and style analysis

The scientific goal of the research is to adapt the portfolio performance and style analysis models and methods to tactical allocation. The results of the research carried out by Edhec thereby allow portfolio alphas to be measured not only for stock picking but also for style timing. This programme is part of a business partnership with the firm EuroPerformance (part of the Fininfo group).

### Indices and benchmarking

Edhec carries out analyses of the quality of indices and the criteria for choosing indices for institutional investors. Edhec also proposes an original proprietary style index construction methodology for both the traditional and alternative universes. These indices are intended to be a response to the critiques relating to the lack of representativity of the style indices that are available on the market. Edhec was the first to launch composite hedge fund strategy indices as early as 2003. The indices and benchmarking research programme is supported by AF2I, Euronext, BGI, BNP Paribas Asset Management and UBS Global Asset Management.

### Asset allocation and extreme risks

This research programme relates to a significant concern for institutional investors and their managers– that of minimising extreme risks. It notably involves adapting the

current tools for measuring extreme risks (VaR) and constructing portfolios (stochastic check) to the issue of the long-term allocation of pension funds. This programme has been designed in co-operation with Inria's Omega laboratory. This research programme also intends to cover other potential sources of extreme risks such as liquidity and operations. The objective is to allow for better measurement and modelling of such risks in order to take them into consideration as part of the portfolio allocation process.

### Asset allocation and derivative instruments

This research programme focuses on the usefulness of employing derivative instruments in the area of portfolio construction, whether it involves implementing active portfolio allocation or replicating indices. "Passive" replication of "active" hedge fund indices through portfolios of derivative instruments is a key area in the research carried out by Edhec. This programme is supported by Eurex and Lyxor.

### ALM and asset management

This programme concentrates on the application of recent research in the area of asset-liability management for pension plans and insurance companies. The research centre is working on the idea that improving asset management techniques and particularly strategic allocation techniques has a positive impact on the performance of Asset-Liability Management programmes. The programme includes research on the benefits of alternative investments, such as hedge funds, in long-term portfolio management. Particular attention is given to the

## About the Edhec Risk and Asset Management Research Centre

institutional context of ALM and notably the integration of the impact of the IFRS standards and the Solvency II directive project.

### Edhec Risk and Asset Management Advisory Board

In a desire to guarantee that its research work is both relevant and operational, the Edhec Risk and Asset Management Research Centre has set up an advisory board chaired by Mr. Jean-François Lepetit, associate professor with Edhec and former president of the French regulatory authority, the COB (Commission des Opérations de Bourse).

The board is made up of around twenty members, chosen according to their experience and their expertise in the financial domain and, more specifically, in asset management.

The functions of the board are, on the one hand, to validate the objectives of the research programmes proposed by the management of the centre and, on the other, to evaluate the results of the research with a view to the impact that they could have on the practices of the asset management industry.

The board will also be called on to give its opinion on the content of the projects that Edhec develops from the research of its asset management research centre (initial training, executive training, etc.).

The board meets on a yearly basis during plenary sessions that allow current and future research centre developments to be reviewed. The board chairman may also, on certain subjects, form ad-hoc working groups that

would be in charge of preparing or studying in greater detail themes that have been or will be brought up in the plenary session.

### Research for business

In order to facilitate the dialogue between the academic and business worlds, the centre has recently undertaken four major initiatives:

- Opening of a web site that is entirely devoted to the activity of international research into asset management. [www.edhec-risk.com](http://www.edhec-risk.com) is aimed at a public of professionals who wish to benefit from Edhec's analyses and expertise in the field of applied portfolio management research such as detailed summaries, from a business perspective, of the latest academic research on risk and asset allocation as well as the latest industry news assessed in the light of the results of the Edhec research programme. [www.edhec-risk.com](http://www.edhec-risk.com) is also the official site for the Edhec Indices.
- Launch of **Edhec-Risk Advisory**, the consulting arm of the research centre focusing on risk management issues within the buy-side industry, and offering a wide range of services aimed at supporting fund managers and their service providers in the fields of operational risk, best execution, structured products, alternative investment due diligence and risk management system implementation.
- Launch of **Edhec Investment Research**, in order to support institutional investors and asset managers in implementing the results of the Edhec Risk and Asset Management Research Centre's research. Edhec Investment Research proposes asset allocation services in the context of a "core satellite" approach encompassing alternative investments.

## About the Edhec Risk and Asset Management Research Centre



- Launch of **Edhec Alternative Investment Education**, which is the exclusive official CAIA association course provider for Europe.

### The Team

The aim of the Edhec Risk and Asset Management Research Centre is to become the leading European centre of research into asset management in the coming years. To that end, Edhec has invested significantly to give the centre an international research team made up of both professors and permanent researchers, with whom professionals are affiliated in the capacity of research associates.

To date, the Edhec Risk and Asset Management Research Centre has more than 28 members: 15 permanent members and 13 associates that are operating in firms that are reputed for their proficiency in asset management.

This team is managed by Professor Noël Amenc, who has considerable experience in asset management as both an academic and a professional.





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