

# The Pros and Cons of Passive Hedge Fund Replication

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# Foreword

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The EDHEC Risk and Asset Management Research Centre has carried out extensive research on asset allocation involving alternative investments in general, and hedge funds in particular, since the centre was founded in 2001. EDHEC was the first to launch composite hedge fund strategy indexes as early as 2003. Using factor analysis techniques, the EDHEC Alternative Indexes were built as the best one dimensional summaries of the information conveyed by competing indexes for a given style. The EDHEC composites were thus able to capture a very large fraction of the information contained in the competing indexes while implicitly minimising their various biases. Consequently, the EDHEC Alternative Indexes tend to be very stable over time and are easily replicable.

In July of 2007, we published a major position paper on the subject of hedge fund replication, entitled "The Myths and Limits of Passive Hedge Fund Replication: An Attractive Concept... Still a Work-in-Progress." That paper examined from both a theoretical and an empirical standpoint the respective benefits and limits of the two different approaches to hedge fund replication, "factor-based replication" and "payoff distribution replication."

On the one hand, we argued that standard implementation efforts of the factor-based approach, arguably the most natural and straightforward way to tackle the hedge fund replication problem, had mostly failed in thorough empirical tests to produce satisfactory results on an out-of-sample basis. We also argued that the payoff distribution approach, while insightful and found to generate (relatively) satisfying results on an out-of-sample basis, unfortunately could not be regarded

as a method suitable for performing hedge fund replication, at least not in a sense likely to meet investors' expectations, due to its documented failure to match a number of relevant time-series properties of hedge fund returns.

Our analysis suggested that it is only through the introduction of novel adapted econometric techniques allowing for a parsimonious statistical estimation of the dynamic and/or non-linear functions relating underlying factors to hedge fund returns that hedge fund replication could be turned from an attractive concept into a workable investment solution.

The publication that we are pleased to present here covers the industry reactions to last year's position paper. The objective of the current paper is to compare the results of the analysis of hedge fund replication by EDHEC's researchers with industry perceptions of the products and techniques that are currently available.

We would like to thank all the respondents who took the time to react to our position paper, without whose participation the publication would not have been possible, and David Schröder, for his insightful comments and analysis.

We hope that you will find the results of our call for reactions both interesting and informative and that you will continue to monitor and contribute to our research in this area.



Noël Amenc, PhD,  
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# About the authors

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# Introduction

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The remarkable rise of the hedge fund industry in the last decade of the twentieth century would not have been possible without the great demand of wealthy private clients for sophisticated investment opportunities. Institutional investors, by contrast, long remained reluctant to invest in hedge funds. Although clearly drawn to the returns and the risk reduction potential of these investments, they have only recently started to shift a part of their assets to hedge funds. The main reasons for this reluctance are the high fees successful hedge fund managers charge their clients and the relative opacity of the funds, along with the operational risks associated with investments in weakly regulated entities. The conflict between the institutional investor's requirements for highly transparent investments and the black box nature of hedge funds has prompted attempts to obtain hedge fund-like returns without actually investing in hedge funds. Investment banks seized the opportunity and have started to create synthetic hedge fund products whose aim is to replicate hedge fund-like returns at lower cost.

the EDHEC Risk and Asset Management Research Centre asked practitioners for their opinions. We find that many investors share the concerns of academics. They doubt that replication products can really deliver the benefits they promise. Moreover, hedge fund replication products are still new to many of the respondents, and very few have hands-on experiences with this new asset class.

This document proceeds as follows. After the executive summary, we present the two main concepts for replicating hedge fund returns, factor replication and payoff distribution replication. We then turn to the call for reactions and outline the practitioner's view on hedge fund replication and its actual uses. Detailed survey results can be found in the appendix.

*1 - This article is forthcoming in the Journal of Alternative Investments.*

Whether these replication products really offer replication of actual hedge fund returns remains to be seen, however. The academic debate, as reflected in a recent publication of the EDHEC Risk and Asset Management Research Centre (Amenc et al. 2007),<sup>1</sup> revolves around two major issues: What is the best means of replicating hedge fund returns? Is the replication thus obtained really a close approximation of hedge funds?

The objective of this paper is to describe practitioners' views on hedge fund replication products. For this purpose,



# Executive Summary



## Executive Summary

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A number of major investment banks and asset management consultants have recently launched investment products that promise to replicate hedge fund returns by following rule-based strategies that invest in liquid financial products. The argument is that such products provide hedge fund-like returns while making it possible to avoid paying the high fees charged by hedge funds. In a recent publication, the EDHEC Risk and Asset Management Research Centre analyses the replicating performance of the two main approaches to hedge fund replication (Amenc et al. 2007). It concludes that, although hedge fund replication is theoretically appealing, it does not, in practice, deliver satisfactory results. Following the study, EDHEC called for practitioner views on replication products. We find that very few of the asset managers who respond to our survey have invested in such products. Many investors are critical of passive hedge fund replication and have doubts about its potential benefits.

**Results of the EDHEC study: current hedge fund replication products fail to deliver in practical tests.**

In theory, the advantages of replication products over hedge funds themselves are higher transparency, higher liquidity, and lower fees. Two distinct concepts for replicating hedge fund returns have been brought to the market by investment banks: factor replication and payoff distribution replication. Empirical tests described in the EDHEC study show that both methods fail to deliver satisfactory results in terms of exact replication of hedge fund returns. While the linear factor replication achieves only a very poor out-of-sample performance in replicating hedge fund

returns, the payoff-distribution replication falls short of providing hedge-fund style time series properties.

**The industry perspective: asset managers are not yet convinced of the advantages of hedge fund replication products and are thus very reluctant to invest.**

Although asset managers agree on the two main advantages of hedge fund replication—high liquidity at rather low cost—criticism outweighs praise. Many investors believe that the behaviour of hedge fund managers is not replicable as such, and consequently that any replication product is unlikely to replicate any managerial skill. In addition, managers criticise the poor performance, the lack of transparency, and the deficient technology of the replication products on offer. Not surprisingly, only 15% of the respondents have invested in replication products. We conclude that many investors are likely to wait for the development of better products, such as those using non-linear factor models. For the time being, they prefer actual hedge funds or other substitutes for hedge funds to passive replication products.

# I. Passive Hedge Fund Replication: Theoretical Concepts and Practical Relevance



# I. Passive Hedge Fund Replication: Theoretical Concepts and Practical Relevance

In the wake of the recent growth of the hedge fund industry, major investment banks—drawn to the high fees of these funds—have tried to develop synthetic hedge fund products, also called “passive hedge fund replication” products. The aim of these initiatives is to enable investors to achieve returns similar to those of hedge funds but with significantly lower fees. A set of rule-based strategies for investment in liquid underlying assets is used in an attempt to achieve this aim.

In sharp contrast to passive equity investment strategies, passive hedge funds cannot be built on observable holdings of hedge fund managers; nor can they invest proportionally in these underlying funds. All they can do is use statistical models to attempt to come as close as possible to the returns or to the factor exposure of the underlying hedge funds. In this respect, these so-called passive replication strategies might be viewed as systematic quantitative trading strategies with hedge fund-like properties rather than as replications of hedge funds.

*2 - To be precise, a third but less common approach aims to replicate hedge funds by using a set of mechanical trading rules (see Kat 2007 and Jaeger 2007).*

The main advantages of replication products are their transparency, liquidity, and low fees. First, regardless of the method used, replication products may be more transparent than hedge funds, since the basic rules followed by these investment products can be made public to investors. Second, given that replication products are constructed on highly liquid underlying assets, replication strategies are similarly liquid. Third, since they are nothing but systematic quantitative strategies, replication strategies do not charge performance fees, and only a relatively low management fee of 1% p.a. Exhibit 1 provides an overview of some of the replication products currently on offer.

Currently, there are two competing approaches to hedge fund replication.<sup>2</sup> One is known as factor replication, the other as payoff distribution replication. Factor replication—as its name suggests—involves constructing portfolios that attempt to replicate hedge fund exposure to risk factors in the hopes of replicating

Exhibit 1: Important Replication Products

Company	Product	Launch date	Method
Blue White Alternative Investment	Blue White Alternative Beta	05/2007	Factor replication
Credit Suisse	L/S Equity Replication Index	05/2008	Factor Replication
Deutsche Bank	Absolute Return Beta Index	06/2007	Rule based trading strategy
Fulcrum Asset Management	Fulcrum Alternative Beta Plus	N/A	N/A
FundCreator		N/A	Distribution Replication
Goldman Sachs	Absolute Return Tracker Index (GS-ART)	05/2008	Factor replication
IceCapital	Alternative Beta	03/2007	Factor replication
IndexIQ	IQ Alpha Hedge Strategy	06/2008	Rule based trading strategy
ING	Invest Alternative Beta	06/2008	N/A
JP Morgan	Alternative Beta Index	02/2007	Factor Replication
Merrill Lynch	Merrill Lynch Factor Index (MLFI/MLFM)	08/2006	Factor Replication
Morgan Stanley	Altera	08/2007	N/A
Partner's Group	Alternative Beta Strategy	10/2004	Rule based trading strategy
Rydex	Absolute Return Strategy	09/2005	N/A
Société Générale	ETF T-Rex	09/2008	Factor Replication

# I. Passive Hedge Fund Replication: Theoretical Concepts and Practical Relevance

returns. The second approach, by contrast, focuses directly on composing portfolios that have the same return probability distribution as hedge funds. In this section, we present both approaches to hedge fund return replication as well as their practical advantages and disadvantages.<sup>3</sup>

## 1. Factor replication

The factor replication approach involves looking for a portfolio of long and/or short positions that, by replicating the exposure to risk factors of individual hedge funds or hedge fund indices, minimises tracking error. This approach dates to the work of Fung and Hsieh (1997) and Agarwal and Naik (2004), who identify the factors behind hedge fund returns. Hasanhodzic and Lo (2007) have developed a model as well, a model extended to the non-linear case by Amenc et al. (2008).<sup>4</sup>

Usually, this procedure involves two steps. First, a suitable factor model to describe the hedge fund or the index returns must be specified. This model is then used to estimate (possibly time-varying) factor loadings that can explain the historical returns of the hedge fund that one is seeking to replicate (in-sample estimation). Second, a clone portfolio with an identical risk exposure is constructed.

Although the concept is straightforward, there are some caveats. If the explained variance of the chosen factor model is low in the in-sample estimation, a significant part of the hedge fund returns cannot be captured by the clone. The simplest explanation for low explained variance is that some relevant factors have been

omitted. Next, even if the explanatory power of the estimated model is high in sample, the out-of-sample performance will not necessarily be satisfactory. First, many of the linear factor models cannot capture the highly dynamic and time-varying risk exposure of hedge funds. Consequently, this static replication of dynamic shifts in risk exposure is doomed to mediocrity from the start. But not even using more complex conditional models is a straightforward solution to the problem. Since hedge fund returns are observable only at monthly intervals, accurate estimation of the parameters is difficult. In addition, highly complex models are prone to over-fitting: they produce good results in the in-sample estimation, but may fare worse than the simpler models when it comes to predicting future returns.

The inability of static factor models to capture the dynamic risk exposure of hedge funds is the Achilles heel of any factor-based replication strategy. In many thorough empirical tests (see the literature review in Amenc et al. 2007 or Kat 2007), factor replication has failed to produce satisfactory results on an out-of-sample basis. Intuitively, the reason that the method disappoints is simple: either the proposed factor models are too simple and thus cannot capture the non-linear and dynamic exposure of hedge fund returns or more advanced models do not have sufficient data to be estimated accurately, and are not robust to small changes in the data. In both cases, the clone portfolios are bound to perform poorly on an out-of-sample basis.

*3 - We can only give a very brief overview here. For more details, please refer to the original EDHEC study on passive hedge fund replication (Amenc et al. 2007).*

*4 - This article is forthcoming in European Financial Management*

# I. Passive Hedge Fund Replication: Theoretical Concepts and Practical Relevance

As a simple illustration of the challenge posed by time-varying factor exposure, consider the EDHEC convertible arbitrage index. As can be seen in exhibit 2, over the period from January 1997 to December 2006, the main return-generating factors for this hedge fund style were equity market returns (strong negative relation to the S&P 500), the returns on short-term bills and convertible bonds, as well as the credit spread (all positively related to the hedge fund index). However, when this period is divided into two sub-periods, the time-varying risk exposure of hedge funds becomes clear. In the first five years, the hedge fund index is largely independent of the returns on common stocks and convertible bonds. In the period from 2002 to 2006, by contrast, these relations are very strong. The opposite holds true for the relation between returns on bills and the returns on convertible arbitrage hedge funds. Whereas there is a rather strong relation in the years from 1997 to 2001, it is less pronounced in the years that follow.

## 2. Payoff distribution replication

Unlike factor replication, the payoff distribution method focuses not on identifying the underlying risk factors of hedge fund returns but on the

payoff distribution of these returns. This approach was developed and proposed by Amin and Kat (2003). The assumption is that the return profile of hedge funds stems from dynamic trading in standard assets, as represented by indices on traditional asset classes. The basic idea then is to establish a direct link between the return distribution of a given index and that of the hedge fund to be replicated. It is possible to construct a clone portfolio (consisting of the index and a risk-free asset) whose distributional properties are similar to those of the hedge fund.

Again, payoff distribution replication is a two-step process. The first involves estimating the payoff distribution function that maps the index return onto the hedge fund return to be replicated. This payoff distribution function makes it possible to link the index return and the hedge fund return. The second step is the construction of the clone portfolio. To this end, standard option pricing models are used to price the payoff function. Then, based on this fair price, one can obtain the initial required investment to construct the clone portfolio. The hedge fund is then replicated with a dynamic trading strategy investing in the index of reference and cash.

Exhibit 2: Factor loadings of the EDHEC convertible arbitrage index over different time periods

	S&P 500	Bills	Convertible bonds	Credit spread	R2	Obs.
1997-2006	-0.06**	2.76***	0.16**	0.49**	0.27	120
1997-2001	-0.01	3.93**	0.05	0.63	0.23	60
2002-2006	-0.15***	1.17*	0.45***	0.32**	0.45	60

\* denotes statistical significance at the 10% level, \*\* denotes statistical significance at the 5% level,

\*\*\* denotes statistical significance at the 1% level.

This table presents the regression estimates and significance levels for the linear regression of the EDHEC convertible arbitrage index on commonly used hedge fund factor returns:  $r_t = \alpha + \beta'X_t + u_t$  where  $r_t$  denotes the monthly hedge fund index return,  $\beta$  is the vector of factor loadings,  $X_t$  the matrix of factor returns, and  $u_t$  the error term. The first line indicates the regression estimate for the entire period (January 1997 to December 2006); the last two lines give the regression results over two sub-periods. The standard errors to calculate the significance levels are adjusted for autocorrelation.

# I. Passive Hedge Fund Replication: Theoretical Concepts and Practical Relevance

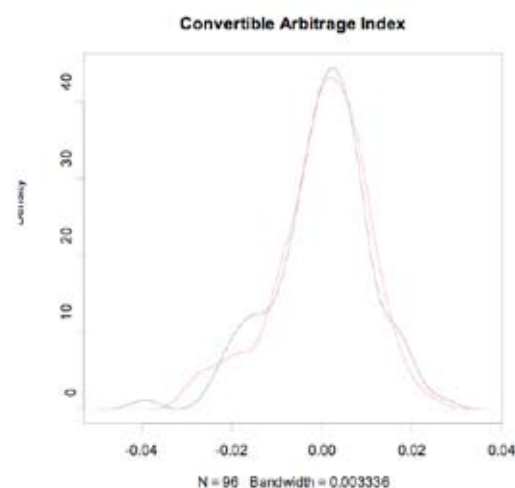
But the payoff distribution approach also has some shortcomings. First, although the mapping of index return distribution and hedge fund distribution can—by definition—lead to accurate replication of the hedge fund return volatility and higher moments, it cannot reproduce the mean of the distribution. Hence, investors get a hedge fund-like payoff with mean returns higher or lower than those of the hedge fund itself. Second, and more important, the payoff distribution approach attempts to replicate not the actual hedge fund returns over time, but only distributional properties at a given time horizon. In other words, this method does not attempt to replicate the month-to-month returns on a hedge fund or hedge fund index.

These theoretical drawbacks are underlined by empirical evidence as well.<sup>5</sup> Although the payoff distribution approach achieves satisfactory matching of the shape of return distributions over the long term in out-of-sample tests, it tends to deliver means different from those of the funds to be replicated. Over time, correlation with actual hedge fund returns is low. Consequently, this method cannot be considered a suitable means of replicating hedge fund returns.

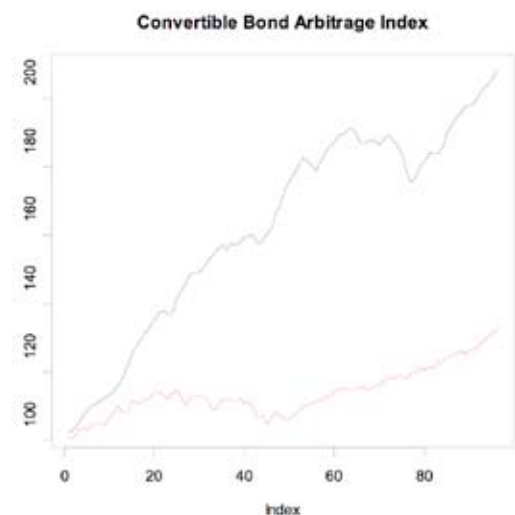
For an idea of the pros and cons of the payoff distribution approach, consider again the EDHEC convertible arbitrage index. The figures present a simulated replication of the hedge fund index following the payoff distribution model described by Amin and Kat (2003).<sup>6</sup> First, exhibit 3 plots the return distribution of the clone portfolio together with the return distribution of the hedge fund index. As can be seen, the clone closely matches the shape of the distribution

of returns of the actual hedge fund. But when the cumulative returns of both the index and its clone are compared, great differences become evident (exhibit 4). The replication has a much lower average return than does the hedge fund index itself. Both findings are a direct result of the method used by the payoff distribution approach: replication of the distributional properties of hedge fund returns while neglecting the mean return.

*Exhibit 3: Return distribution of an investment in the EDHEC convertible arbitrage index and its payoff distribution replication.*



*Exhibit 4: Cumulative return of an investment in the EDHEC convertible arbitrage index and its payoff distribution replication over time (out of sample).*



5 - Again, see Amenc et al. (2007) for further references on empirical studies.

6 - The example is taken from Amenc et al. (2007). The time period is from January 1999 to December 2007. The analysis abstracts from transaction costs. For further details on the methodology, please refer to the cited document.

# I. Passive Hedge Fund Replication: Theoretical Concepts and Practical Relevance

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## II: Practitioners' Views of Hedge Fund Replication Products



## II: Practitioners' Views of Hedge Fund Replication Products

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The EDHEC study of passive hedge fund replication highlights the inability of existing products to meet the investor's needs for hedge fund replication: the factor replication approach fails to deliver accurate out-of-sample replication because of estimation error and misspecification. Distribution replication fails to provide time series properties similar to those of hedge funds; doing so, in fact, is not an objective of the approach. For an idea of what asset managers think of hedge fund replication products, what they consider the appropriate method of hedge fund replication, and whether they use these products in their day-to-day business, the EDHEC Risk and Asset Management Research Centre surveyed asset managers and institutional investors. We present below the broad findings of this survey. The complete findings are can be found in an appendix to this document.

### 1. The general industry perspective: competing opinions and complete ignorance

#### **Diverging opinions: advocates, opponents, and those who don't know**

To start with, it is important to stress that there is actually no obvious industry consensus on hedge fund replication products. The divergence of the practitioners' opinions on this topic is tremendously high. The spectrum of views of passive hedge fund products goes from complete approval to absolute mockery. One asset manager says: "I think the whole concept is a joke. Good luck to those who try". Most of the respondents who express an opinion take one of the two extremes. In other words, respondents are either

advocates or opponents of replication products.

However, the majority of the survey respondents are either uninterested in the replication products on offer or not yet convinced. The cause of this indifference is difficult to determine. Some asset managers, for example, do not believe in hedge fund strategies as such, indicating that the "sole survivorship bias overstates [their] returns". So they are certainly not interested in replications of such strategies. However, we believe that most asset managers are simply not convinced by the current replication methods.

Apart from the group of advocates and opponents of the replication products, there is a large group of respondents—perhaps even the largest fraction of the survey—who seem not to know what to think about replication products, and whether they should use them. For example, 40% of the asset managers express no opinion on the best means of replicating hedge fund returns. 30% say that they might use replication products sometime in the future. Finally, of those who have invested in such products, 56% feel that it's too early to say whether they are satisfied with their investment or not.

#### **Reasons for disagreement**

The reason for the diverging opinions on hedge fund replication is probably closely related to the different views investors have on hedge funds in the first place. Practitioners appear to have very different objectives when investing in hedge funds or their replications. Some are interested in short-term commitments, whereas others use them as long-term investments. Some managers have a clear focus on the abnormal

## II: Practitioners' Views of Hedge Fund Replication Products

returns (the alpha) of hedge funds; others are primarily interested in their covariance structure (beta). Institutional investors are more likely to judge hedge fund returns as a component of their overall portfolio—private bankers might still consider them from a stand-alone viewpoint. Finally, besides their relative importance, absolute stakes in hedge funds can be very different.

Accordingly, each investor has a particular view of hedge fund replication products, their pros and cons, and the possible alternatives. One investor's advantage can be another's disadvantage. Some asset managers, for example, think that given the poor performance of replication products—and compared to those for exchange-traded funds—the fees are excessive, but for others the rather low fees—compared to those for hedge funds—are the principal draw.

So this call for reactions can be considered only a rough approximation of industry opinion. In essence, each of the survey participants appears to have his own, very individual point of view. Very clearly, hedge fund replication products still have a long way to go to before they win broad acceptance in the asset management community.

### 2. Benefits of Hedge Fund Replication

In spite of the drawbacks of hedge fund replication, summarised in section I, there are advocates of these products. In essence, they have two benefits in mind: high liquidity and low costs. Contrary to popular belief, increased transparency is not seen as a particularly great advantage of replication products.

#### High Liquidity

The main advantage of investing in replication products is their liquidity, believed to be much higher than that of hedge funds themselves, which can have long lock-up periods. This opinion is shared by 78% of the respondents. Because of its high liquidity, some asset managers point out that "this type of product can be used for cash management with hedge fund-like returns". Or, as another banker added, "the liquidity of a [...] replicator makes it a useful tool to adjust exposures quickly."

#### Low fees

67% of those who respond to the survey mention the fees that are lower than those of hedge funds, thereby giving "access to cheap exposure to hedge fund factors". As a consequence, replication products could also be used as an "educational investment to get new [private banking] clients used to hedge fund behaviour before moving them to funds of hedge funds", as one banker commented. Or, as one asset manager added: "It is better than nothing for small portfolios of private clients".

### 3. Drawbacks of Hedge Fund Replication

Asset management professionals, however, express a great deal of scepticism about the successful replication of hedge fund returns. Only 15% of all survey respondents, for example, have invested in these products. 30% are convinced that they will never do so. Those who have done so are made up of equal parts satisfied and dissatisfied. What then are the reasons for this scepticism?

In essence, asset managers see four drawbacks to passive hedge fund replication:

## II: Practitioners' Views of Hedge Fund Replication Products

poor performance (45%), theoretical impossibility of replicating hedge funds (44%), poor transparency (44%), and flaws in the technologies used by the existing products. We address these problems in greater detail below.

### Hedge funds are not replicable

Apart from poor performance, one of the main reasons (chosen by 44% of survey respondents) that investors avoid replication products is that they believe that hedge fund management behaviour is in general not replicable. One asset manager said: "If it's true alpha, then it's not replicable". Or, as another manager put it: "If I invest in a hedge fund, it is because its performance is not easily replicable", before going on to say that current "replication with monthly data loses all the 'daily skills'" of a hedge fund manager. Some managers acknowledge that replication might work in theory. However, they consider it only an insufficient approximation of real hedge fund returns. One investor argued: "It is clear that some elements of hedge fund performance are replicable in theory. However, [...] the hardest elements to replicate are those one wishes to replicate, and vice-versa".

### No transparency

Although many of the asset managers agree that one advantage of replication products is their transparency—greater than that of hedge funds—they still feel that it is not yet great enough. 38% of the asset managers believe that this investment is too much of a black box. As one manager

underlined: "Buying a replication strategy is buying single hedge fund risk linked to a black box and no track record with a fund of funds-like payoff and fees, therefore not really a good investment".

### Deficient technology

For many investors—and here is one of the very few points on which asset managers seem to agree—non-linear or conditional factor models are the best means of replicating hedge fund returns. More than two-thirds of respondents who express a preference for a replication technique believe that these complex and recent models are the most promising techniques. Put differently, asset managers believe in advanced statistical models to replicate hedge fund returns. However, no product currently on offer uses this complex technology. In this respect, the view of the asset managers can be interpreted as a critique of the overly simple replication products on the market.

Investors also emphasise the rear-mirror problem of hedge fund replication. Since the models are founded on historical returns, future shifts in the behaviour of hedge fund managers cannot be captured. Some asset managers consequently object that "the products on the market at the moment all use a methodology that is lagging at least one month." In other words, they fear that the replication product is just the "position the hedge fund managers had a month ago".

Exhibit 5: Summary advantages and disadvantages of replication products as perceived by practitioners.

Perceived Advantages of Replication Products	Perceived Disadvantages of Replication Products
<ul style="list-style-type: none"> <li>• Low Fees</li> </ul>	<ul style="list-style-type: none"> <li>• Poor Performance</li> </ul>
<ul style="list-style-type: none"> <li>• High Liquidity</li> </ul>	<ul style="list-style-type: none"> <li>• Low Transparency (of exact methodology)</li> </ul>
<ul style="list-style-type: none"> <li>• High Transparency (compared to hedge funds)</li> </ul>	<ul style="list-style-type: none"> <li>• Deficient Technology</li> </ul>

## II: Practitioners' Views of Hedge Fund Replication Products

### 4. Alternatives to the Hedge Fund Replication Products on Offer

Although many asset managers are reluctant to invest in the hedge fund replication products on the market, they are nevertheless interested in including hedge fund-style assets in their portfolios. So then, if they do not invest in these products, how do asset managers act on their interest in hedge fund-style assets? What alternatives do they use?

#### **Substitutes: hedge funds, funds of hedge funds, and investable hedge fund indices**

The natural substitutes for hedge fund replication products are hedge funds themselves, of course. Many managers apparently accept the high fees and other drawbacks of hedge funds in exchange for their returns. For example, one banker replied: "I believe that we do not need hedge fund replication, because [the] long-term track records of hedge fund managers are better and more robust". Funds of hedge funds are also viewed as a good substitute for replication products. "Any effort at hedge

fund replication is doomed to mediocrity. [...] I think a good fund-of-funds justifies its fees easily", one manager stated. In a similar vein, practitioners seem to prefer investable hedge fund indices to replications: "There is no point in replicating an investable index [since] one can obtain such returns directly from investing in the index".

#### **Other investment classes: mutual funds with hedge fund-like strategies**

Another way out of the dilemma is to find other, cheaper investment products that have the properties desired by asset managers. Some standard mutual funds, for example, have hedge fund strategies. A manager said: "our own mutual fund [...] uses merger arbitrage and distressed securities as strategies at a fraction of the cost of a hedge fund [or any replication thereof]". A related statement addresses the bias of current hedge fund replication products towards the more directional strategies: "there is little point in paying for the long-only exposure to mainstream markets which can easily be gained in other ways".

### **Additional comments by participants**

"A marketing gimmick really. Same process was used in the late '80s [and] early '90s to replicate FX traders. It failed".

"The concept of most replication strategies is fairly straightforward, but the implementation is immensely complex. Picking a replication product is a challenging activity in its own right—very different from an equity tracker, for example. The reaction of most of the commercial product providers of replication strategies to their generally very poor performance is disappointing and in some cases totally unacceptable. My conclusion is that some of these strategies are interesting in their own right, but not generally as alternatives to investing in the underlying funds, other than for those investors who really have no choice".

## II: Practitioners' Views of Hedge Fund Replication Products

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### **In-house replication products**

Finally, some asset managers are not that sceptical of hedge fund replication as such. But they mistrust the existing products and their external management: "If I have to invest in such a product, I will construct it myself". Not investing in external funds is a business principles of some respondents.

# Conclusion



## Conclusion

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In this call for reactions we ask practitioners for their views on the potential advantages and disadvantages of the so-called passive hedge fund replication products. Most practitioners seem to share the opinion of the recent EDHEC study of this topic; the inability of existing products to meet investor needs for hedge fund replication is thus highlighted.

Although many asset managers agree that hedge fund replication products have two main advantages—high liquidity and relatively low costs—most investors are sceptical of these products. Indeed, only 15% of all respondents to the survey have invested in these products, as compared to 30% who report that they will never do so. In addition to the rather categorical critique that good hedge fund managers are not replicable, managers mention a lack of transparency and deficient technology as the main reasons for their lack of interest. The EDHEC call for reactions also reveals dissatisfaction with current replication products: only 22% of the investors in hedge fund replication products are clearly content with their investment.

As many respondents have not come to a conclusion about hedge fund replication products, they prefer to wait until the market has delivered its verdict. One manager put it this way: "Hedge fund replication products are still in the embryo stage. Nevertheless, we believe once these products are tested long enough, the ones which survive the shakeout will be here to stay".

# References



## References

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- Agarwal, V., and N. Y. Naik (2004): "Risks and Portfolio Decisions Involving Hedge Funds", *Review of Financial Studies* 17(1), 63-98.
- Amenc, N., W. Géhin, L. Martellini, and J. Meyfredi (2007): "The Myths and Limits of Passive Hedge Fund Replication", EDHEC position paper, Nice.
- Amenc, N., W. Géhin, L. Martellini, J. Meyfredi, and V. Ziemann (2008): "Passive Hedge Fund Replication—Beyond the Linear Case", EDHEC working paper, Nice.
- Amin, G., and H. Kat (2003): "Hedge Fund Performance (1990-2000): Do the 'Money Machines' Really Add Value?" *Journal of Financial and Quantitative Analysis* 38, 251-274.
- Fung, W., and D. A. Hsieh (1997): "Empirical Characteristics of Dynamic Trading Strategies: The Case of Hedge Funds", *Review of Financial Studies* 10(2), 275-302.
- Hasanhodzic, J., and A. W. Lo (2007): "Can Hedge Fund Returns Be Replicated? The Linear Case", *Journal of Investment Management* 5(2), 5-45.
- Jaeger, L. (2007): "Alternative Beta Strategies: a new paradigm to the hedge fund industry – parallels and differences to passive investing in the traditional fund management industry", Presentation at the Hedge Fund Replication and Alternative Beta Conference, London.
- Kat, H. M. (2007): "Alternative Routes to Hedge Fund Replication", *Journal of Wealth Management* 10(3), 25-39.

# Appendix: Detailed Survey Results



## Appendix: Detailed Survey Results

### The EDHEC call for reactions and survey respondents

For an idea of what practitioners really think about the strengths and weaknesses of hedge fund replication products, and—most important—whether they actually use them, the EDHEC Asset Management Research Centre called for reactions to its study on passive hedge fund replication.

This call for reactions had five multiple choice questions, including the possibility to add further comments. The questions were sent to asset management firms and pension funds, as well as to private bankers and related institutions that are interested in optimal asset management strategies. Most of the ninety-seven respondents to the call for reactions are based in Europe. The survey period is from 22/01/2008 to 21/04/2008. The breakdown of the respondents' professions can be seen in exhibit A1. With 53% of the survey participants, asset management firms—the target group of the EDHEC study—are the largest professional category represented in this survey. Pension funds and insurance companies account for another 13% of the sample. Private bankers and family

offices together represent another 13% of the respondents. The remaining 21% are other professionals in the financial service industry, such as brokers or financial hedge fund consultants.

### The different approaches to replicating hedge fund returns

Respondents to the survey are first asked for their views on the most promising approaches to passive replication of hedge fund returns. In this question, multiple answers are possible. The results are shown in exhibit A2. Non-linear or conditional factor models are considered the most suitable of the replication techniques (46%). Pay-off distribution models, such as those offered by FundCreators, come next (thought promising by 15% of respondents). Only 7% are in favour of a simple linear factor model, similar to the Merrill Lynch product. Most striking, however, is that 40% of respondents express no view of the best approach to replicating hedge fund returns. It is unclear, though, whether these respondents

Exhibit A1: Type of activity of the respondents

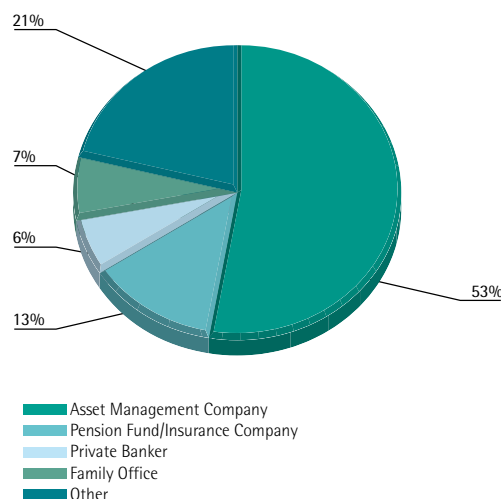
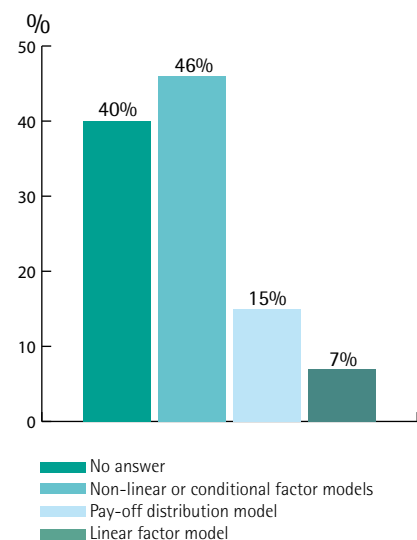


Exhibit A2: What are the most promising approaches for passively replicating the returns of hedge funds?



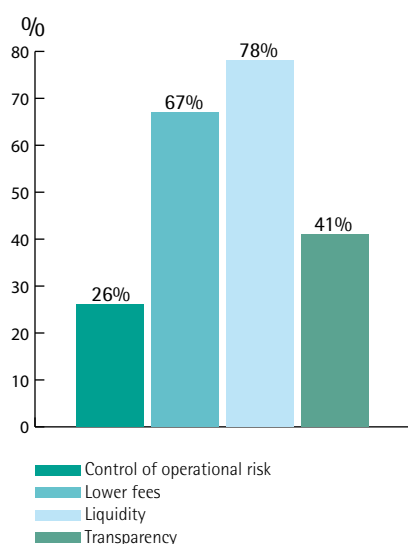
## Appendix: Detailed Survey Results

lack sufficient knowledge of the various products on offer, or whether they simply do not believe in any of them. In any case, this large proportion can be interpreted as a reflection of the managers' uncertainty as to the value of these products.

### The pros and cons of hedge fund replication products

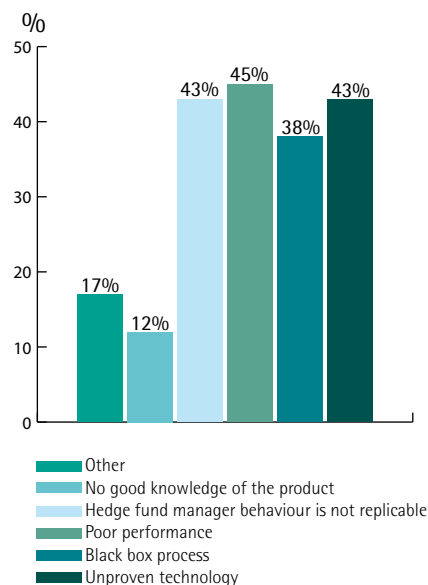
The next set of questions turned to the central issue of the study: the advantages and disadvantages of passive hedge fund replication. We were interested in the practitioners' reasons for investing in these products or not. The answers to the first of two questions are shown in exhibit A3. Again, multiple answers are possible. For many of the respondents (78%), high liquidity is the main advantage of hedge fund replication products. Fees that are lower than those of hedge funds are also a draw (67%). Greater transparency and control of operational risk are less important reasons for investing in these products.

Exhibit A3: What reasons would you have for investing or possibly investing in a hedge fund replication product?



What then are the disadvantages that asset managers have in mind when it comes to using hedge fund replication products? That was the content of the next question, to which respondents could again choose more than one answer. As shown in exhibit A4, it turns out that the respondents see basically four obstacles to investing in those products: first, they criticise the poor performance of these products. Second, they believe that hedge fund manager behaviour is not replicable. Third, they have no faith in the concepts proposed (unproven technology). Fourth, they criticise the lack of transparency (black box process). Unfamiliarity with replication products is much less of an issue. Finally, some 17% of respondents think investing in replication products is not a good idea for other reasons. The most cited additional objections are the still high fees, the poor properties of replication products (other than performance), the preference for in-house products, or a general lack of interest in hedge funds.

Exhibit A4: What reasons would limit your interest or make it unlikely that you would wish to invest?

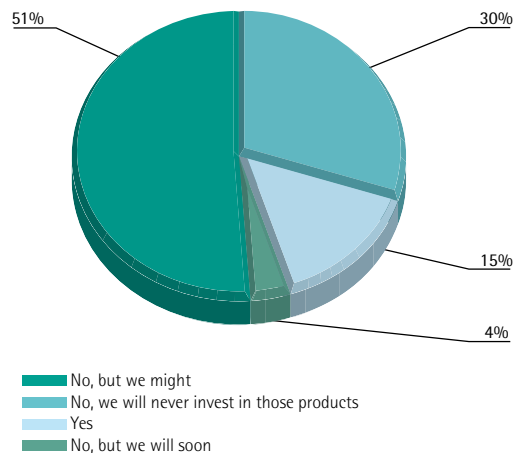


## Appendix: Detailed Survey Results

### The use of and satisfaction with hedge fund replication

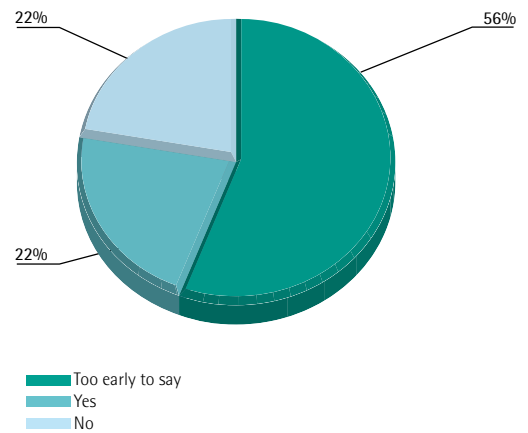
In the last set of questions the call for reactions focuses on the actual use of hedge fund replication. As exhibit A5 shows, hedge fund replication products are not yet very popular with asset managers. Only 15% of all respondents report that they have used passive replication products. About 30%, by contrast, report that they will never do so. The majority (55%) of respondents are considering investing in replication products sometime in the future, 4% of them in the very near future.

Exhibit A5: Have you invested in a hedge fund replication product?



have started doing so only very recently. The remaining 44% of the respondents are split down the middle between satisfied and dissatisfied customers of synthetic products, a split that once again highlights the mixed overall views of hedge fund replication products.

Exhibit A6: If you have invested in a hedge fund replication product, are you satisfied with it?



Finally, how satisfied are investors with their previous experience with synthetic hedge funds products? That was the last question of EDHEC's call for reactions on passive hedge fund replication. As can be seen in exhibit A6, many of the respondents feel that it is too early to say whether the proposed products are beneficial to them or not: more than half of those who have invested have yet to make up their minds. In other words, if asset managers have invested in replication products, they

# About the EDHEC Risk and Asset Management Research Centre

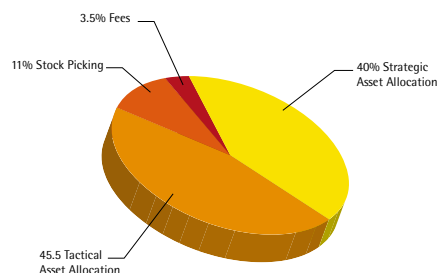
EDHEC is one of the top five business schools in France. Its reputation is built on the high quality of its faculty (110 professors and researchers from France and abroad) and the privileged relationship with professionals that the school has been developing since its establishment in 1906. EDHEC Business School has decided to draw on its extensive knowledge of the professional environment and has therefore focused its research on themes that satisfy the needs of professionals. EDHEC is also one of the few business schools in Europe to have received the triple international accreditation: AACSB (US-Global), EQUIS (Europe-Global) and Association of MBAs (UK-Global).

EDHEC pursues an active research policy in the field of finance. The EDHEC 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.

### Percentage of variation between funds



Source: EDHEC (2002) and Ibbotson, Kaplan (2000)

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 alpha 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 an attempt to ensure that the research it carries out is truly applicable, EDHEC has implemented a dual validation system for the work of the EDHEC 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 the scientific quality and the operational usefulness of the programmes.

To date, the Centre has implemented six research programmes:

### Asset Allocation and Alternative Diversification

*Sponsored by SG Asset Management and Newedge*

The research carried out focuses on the benefits, risks and integration methods of the alternative class in asset allocation. From that 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

*Part of a business partnership with EuroPerformance*

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 alpha to be measured not only for stock picking but also for style timing.

### Indices and Benchmarking

*Sponsored by Af2i, Barclays Global Investors, BNP Paribas Investment Partners, NYSE Euronext, Lyxor Asset Management, and UBS Global Asset Management*

This research programme has given rise to extensive research on the subject of indices and benchmarks in both the hedge fund

## About the EDHEC Risk and Asset Management Research Centre

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universe and more traditional investment classes. Its main focus is on analysing 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 representativeness of the style indices that are available on the market. In 2003, EDHEC launched the first composite hedge fund strategy indices.

### **Asset Allocation and Derivatives**

*Sponsored by Eurex, SGCIB and the French Banking Federation*

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 includes the "Structured Products and Derivatives Instruments" research chair sponsored by the French Banking Federation.

### **Best Execution and Operational Performance**

*Sponsored by CACEIS, NYSE Euronext, and SunGard*

This research programme deals with two topics: best execution and, more generally, the issue of operational risk. The goal of the research programme is to develop a complete framework for measuring transaction costs: EBEX ("Estimated Best Execution") but also to develop the existing framework for specific situations (constrained orders, listed derivatives, etc.). Research also focuses on risk-adjusted performance measurement

of execution strategies, analysis of market impact and opportunity costs on listed derivatives order books, the impact of explicit and implicit transaction costs on portfolio performances, and the impact of market fragmentation resulting from MiFID on the quality of execution in European listed securities markets. This programme includes the "MiFID and Best Execution" research chair, sponsored by CACEIS, NYSE Euronext, and SunGard.

### **ALM and Asset Management**

*Sponsored by BNP Paribas Investment Partners, AXA Investment Managers and ORTEC Finance*

This research 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 institutional context of ALM and notably the integration of the impact of the IFRS standards and the Solvency II directive project. It also aims to develop an ALM approach addressing the particular needs, constraints, and objectives of the private banking clientele. This programme includes the "Regulation and Institutional Investment" research chair, sponsored by AXA Investment Managers, the "Asset-Liability Management and Institutional Investment Management" research chair, sponsored by BNP Paribas Investment Partners and the "Private Asset-Liability Management" research chair, in partnership with ORTEC Finance.

# About the EDHEC Risk and Asset Management Research Centre

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Six Research Chairs have been endowed:

## **Regulation and Institutional Investment**

*In partnership with AXA Investment Managers*

The chair investigates the interaction between regulation and institutional investment management on a European scale and highlights the challenges of regulatory developments for institutional investment managers.

## **Asset-Liability Management and Institutional Investment Management**

*In partnership with BNP Paribas Investment*

*Partners*

The chair examines advanced asset-liability management topics such as dynamic allocation strategies, rational pricing of liability schemes, and formulation of an ALM model integrating the financial circumstances of pension plan sponsors.

## **MiFID and Best Execution**

*In partnership with NYSE Euronext, SunGard, and CACEIS Investor Services*

The chair looks at two crucial issues linked to the Markets in Financial Instruments Directive: building a complete framework for transaction cost analysis and analysing the consequences of market fragmentation.

## **Structured Products and Derivative Instruments**

*Sponsored by the French Banking Federation (FBF)*

The chair investigates the optimal design of structured products in an ALM context and studies structured products and derivatives on relatively illiquid underlying instruments.

## **Financial Engineering and Global Alternative Portfolios for Institutional Investors**

*Sponsored by Morgan Stanley Investment Management*

The chair adapts risk budgeting and risk management concepts and techniques to the specificities of alternative investments, both in the context of asset management and asset-liability management.

## **Private Asset-Liability Management**

*In partnership with ORTEC Finance*

The chair will focus on the benefits of the asset-liability management approach to private wealth management, with particular attention being given to the life cycle asset allocation topic.

## **The EDHEC PhD in Finance**

The PhD in Finance at EDHEC Business School is designed for professionals who aspire to higher intellectual levels and aim to redefine the investment banking and asset management industries.

It is offered in two tracks: a residential track for high-potential graduate students who will hold part-time positions at EDHEC Business School, and an executive track for practitioners who will keep their full-time jobs.

Drawing its faculty from the world's best universities and enjoying the support of the research centre with the most impact on the European financial industry, the EDHEC PhD in Finance creates an extraordinary platform for professional development and industry innovation.

# About the EDHEC Risk and Asset Management Research Centre

## Research for Business

To optimise exchanges between the academic and business worlds, the **EDHEC Risk and Asset Management Research Centre** maintains a website devoted to asset management research for the industry: [www.edhec-risk.com](http://www.edhec-risk.com), circulates a monthly newsletter to over 200,000 practitioners, conducts regular industry surveys and consultations, and organises annual conferences for the benefit of institutional investors and asset managers.

The Centre's activities have also given rise to the business offshoot **EDHEC Asset Management Education**. **EDHEC Asset Management Education** helps investment professionals to upgrade their skills with advanced risk and asset management training across traditional and alternative classes.

### Industry surveys: comparing research advances with industry best practices

EDHEC regularly conducts surveys on the state of the European asset management industry. They look at the application of recent research advances within investment management companies and at best practices in the industry. Survey results receive considerable attention from professionals and are extensively reported by the international financial media.



### Recent industry surveys conducted by the EDHEC Risk and Asset Management Research Centre

- 1/ The EDHEC European Investment Practices Survey 2008, sponsored by Newedge
- 2/ The Impact of IFRS and Solvency II on Asset-Liability Management and Asset Management in Insurance Companies, sponsored by AXA Investment Managers
- 3/ EDHEC European Real Estate Investment and Risk Management Survey, sponsored by Aberdeen Property Investors and Groupe UFG

### EuroPerformance-EDHEC Style Ratings and Alpha League Table

The business partnership between France's leading fund rating agency and the EDHEC Risk and Asset Management Research Centre led to the 2004 launch of the EuroPerformance-EDHEC Style Ratings, a free rating service for funds distributed in Europe which addresses market demand by delivering a true picture of alpha, accounting for potential extreme loss, and measuring performance persistence. The risk-adjusted performance of individual funds is used to build the Alpha League Table, the first ranking of European asset management companies based on their ability to deliver value on their equity management. [www.stylrating.com](http://www.stylrating.com)

### EDHEC-Risk website

The EDHEC Risk and Asset Management Research Centre's website makes EDHEC's analyses and expertise in the field of asset management and ALM available to professionals. The site examines the latest academic research from a business perspective, and provides a critical look at the most recent industry news. [www.edhec-risk.com](http://www.edhec-risk.com)



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