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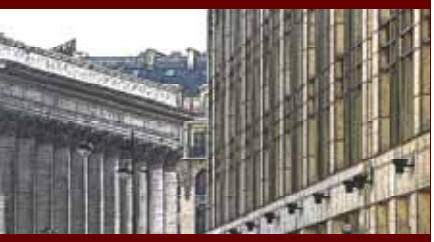

Hedge Fund Indices for Retail Investors:

UCITS Eligible or not Eligible ?

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Executive summary

Hedge fund indices have grown in numbers over the recent years and made their presence widespread through a number of providers. Assets linked to hedge fund indices currently exceed $12 billion, and the debate is now focusing on whether they should be considered as eligible assets for UCITS III funds. The consequences of a positive or negative answer from regulators are extremely important. In particular, a positive answer would imply that *any* non-approved offshore hedge fund can be indirectly distributed to *any* retail investors via an UCITS III vehicle, as long as this fund belongs to a hedge fund index. The problem is that existing hedge fund indices are fundamentally different from indices of traditional assets.

In this paper, we review non-investable hedge fund indices, the various steps of their construction and the numerous performance biases that affect their returns. These biases are so important that in our view, the majority of existing hedge fund indices are not representative of the hedge fund universe – at best, they represent a biased sample of funds that have agreed to report to a database or an index provider. The case of the so-called investable hedge fund indices, which are often presented as an alternative to actively managed funds of hedge funds, is not much better. Our observations reveal that existing investable indices are less representative of the hedge fund universe and more biased than their non-investable cousins. They are, in essence, funds of hedge funds managed according to arbitrary rules and primarily designed to support high-fee tracking products.

As a result of their numerous biases, lack of representativity and/or construction, our view is that *existing* hedge fund indices do not fulfil the three basic criteria required to become UCITS III eligible – sufficient diversification, ability to serve as an adequate benchmark and appropriate publication. We therefore suggest *excluding* them from the list of UCITS III eligible assets. Of course, in the future, this position could be revised once quality hedge fund indices are available and fulfil the aforementioned three basic criteria.

“Being called an index
is not yet being an index”.

Thomas Schneeweiss
University of Massachusetts Amherst

1 - Introduction

Hedge funds have been around for more than sixty years. Relying on short selling techniques, economic leverage and using derivatives for investment purposes, they operated in relative secrecy and focused on generating high absolute returns for their investors. Most of them were structured as private partnerships or as offshore companies in order to benefit from favourable tax regimes and a low level of regulation. This allowed them to operate with very few restrictions, use leverage and derivatives (long and short), or even invest in non-listed securities. But it also limited their ability to be distributed onshore to retail investors – most countries prohibit the public marketing of non-authorised funds to the general public. Initially, this was not a concern, because hedge funds were only offered via private placements and/or with some minimum investment limits, some qualifying investor rules and some limits on the maximum number of investors to whom the fund could be offered. However, the situation has changed over recent years.

With the 2000-2002 bear market and the subsequent fall of bond yields, the interest for hedge funds has grown tremendously, particularly within European institutional and retail investors. Several financial intermediaries have begun to offer financial instruments with exposure to hedge funds, such as funds of hedge funds, structured products, guaranteed notes and other hedge fund certificates. The sell-side industry is obviously highly favourable to these new high-fee, high-turnover and high-commission products, and would like to distribute them as widely as possible. But European regulators, whose primary focus remains the protection of vulnerable retail investors, are watching. So far, the public marketing of non-approved funds to the general public is generally prohibited. Some national regulatory initiatives have been taken to regulate the distribution of authorised hedge funds to retail investors over recent years, but with rather disparate approaches[1]: some European jurisdictions focus on products, others more on the fund manager and others more on the distribution of the fund.

Surprisingly, the possibility of a pan-European distribution of hedge funds has indirectly surfaced with implementation of the so-called UCITS III Directive[2], and more specifically during the consultation phase organised by the Committee of European Securities Regulators (CESR) regarding the eligible assets of UCITS III Funds. According to the Directive, UCITS III Funds may invest in several instruments, including derivative instruments on financial indices if these indices fulfil some minimum criteria. But which underlying assets should be accepted? During the consultation phase, the asset management industry expressed a strong interest in allowing derivatives on financial indices based on non-eligible assets, such as indices on commodity derivatives, indices on property or hedge fund indices. In CESR's view, the two former categories were eligible, provided they complied with the required criteria, i.e. that the index was sufficiently diversified, represented an adequate benchmark for the market to which it referred and was published in an appropriate

[1] See IOSCO (2006).
[2] Directive 85/611/EEC as amended by Directives 2001/107/EC and 2001/108/EC.

manner – see Appendix A. However, the case of hedge fund indices was not as straightforward, due to their complex nature, the fact that they were still developing and the potential consequences of the decision. Indeed, including hedge fund indices in eligible assets would imply that *any* non-approved offshore hedge fund could be indirectly distributed to retail investors via an UCITS III vehicle, as long as this fund belonged to a hedge fund index. Prudently, the CESR decided to start a new consultation round and reconsider its position by October 2006, after gaining sufficient experience[3]. In the meantime, CESR members agreed not to authorise setting up new UCITS with such investment policies.

Several papers have been produced during the consultation round. Not surprisingly, their conclusions diverge on whether it is desirable or not to include hedge fund indices in the list of eligible assets. However, very few of them focus on the fundamental problem, i.e. the quality of the *existing* hedge fund indices and their ability to measure what they should measure, i.e. the performance of the hedge fund industry. In this paper, we therefore aim at filling this gap by revisiting the situation of hedge fund indices, both as performance indicators and as potential support for UCITS III investment vehicles. Mark Anson (2003), the CIO of Calpers, once criticised hedge fund indices because according to him, they provided investors with a somewhat biased and confusing picture of hedge fund performance. Is this still the case with the newly created indices, and particularly the so-called investable hedge fund indices? Have index providers learned from their early mistakes, and does their progeny now fulfil the required criteria to become UCITS III eligible? These are some of the questions we will address in this paper.

The structure of this paper is as follows. Section 2 describes the difficulties of building a representative hedge fund index, as well as the different biases that are inherent to the process. Section 3 briefly discusses the possible approaches available to track a given hedge fund index. Section 4 reviews investable hedge fund indices and describes their specific construction biases. In Section 5, we draw the parallel that exists between funds of hedge funds and investable indices. Lastly, section 6 analyses *existing and future* hedge fund indices with respect to their eligibility as UCITS III components.

[3] See CESR's Advice to the European Commission on Clarification of Definitions concerning Eligible Assets for Investments of UCITS (26 Jan. 2006) ref. CESR 06/05 paragraphs 158 and 159.

2 - Hedge fund indices and their biases: an overview

The first attempts to create hedge fund indices grew out of hedge fund advisory firms such as the Hennessee Group (Hennessee), Hedge Fund Research (HFR) or Managed Accounts Reports (MAR). The earliest indices were initially in-house tools designed to gauge the hedge fund industry's general direction, but the growing interest in benchmarking hedge fund returns convinced firms to publish their index on a regular basis. Since then, a growing number of firms have been involved in the creation and publication of hedge fund indices. These firms include small boutiques specialised in hedge funds, hedge fund data providers, publishers, but also leading traditional index providers and companies with hedge fund products to sell. Today, the initial lack-of-index issue that once deterred many institutions from embracing hedge funds is now slowly being swept away. In fact, the proliferation of new hedge fund indices has even resulted in a new difficulty for investors: that of choosing an appropriate one. At the time of the writing, we have counted 24 hedge fund index providers, several composite indices and hundreds of single-strategy indices – see Table 1.

Table 1: Major hedge fund index providers

Index Provider	Index launch date	Start of historical data	Web Site
Altvest	2000	1993	www.investorforce.com
Barclays	2003	1997	www.barclaygrp.com/indices/ghs
Bernheim	1995	1999	www. hedgefundnews.com
Blue X	2002	2002	
CISDM/MAR	1994	1990	www.cisdm.org
CS/Tremont	1999	1994	www.hedgeindex.com
Dow Jones	2003	2002	www.djindexes.com
EACM	1996	1996	www.eacmalternative.com
Edhec	2003	1997	www.edhec-risk.com
Eurekahedge	2002	2000	www.eurekahedge.com
Feri	2002	2002	www.feri-alta.de
FTSE	2004	1998	www.ftse.com
Hennessee	1987	1987	www.hennesseegroup.com
HF Intelligence	2001 to 2003	1998	www.hedgefundintelligence.com
HF Net (Tuna)	1998	1976 to1995	www.hedgefund.net
HFR	1994	1990	www.hedgefundresearch.com
LJH	1992	1989	www.ljh.com
MondoHedge	2003	2002	www.mondohedgeindex.com
MSCI	2002	2002	www.msci.com
S&P	2002	1998	www.spglobal.com
RBC	2005	2005	www.rbchedge250.com
TalentHedge	2003	2003	www.talenthedge.com
Van Hedge	1994	1988	www.vanhedge.com
Zurich	2001	1998	Discontinued

Surprisingly, none of these hedge fund indices has really managed to become the industry's standard for measuring performance. Moreover, due to the important theoretical and practical barriers to implementing a hedge fund index, index providers have often taken subjective decisions which result in profound disparities between the resulting indices. This will not make the investors' search for a reference index any easier, as we will see shortly.

2-1 Database biases

In an ideal world, the construction of a representative hedge fund index should normally begin with a database containing information about the *entire universe* of hedge funds, i.e. approximately 8,000 funds. Unfortunately, in practice, the biggest challenge with hedge funds is access to reliable data. While mutual funds must regularly disclose information to the public, hedge funds are private investment pools and so are not obliged to do so. In fact, they only need to report to their existing investors – in certain jurisdictions, disclosing information outside the circle of existing investors could be considered as advertising, which is prohibited. Consequently, there is no exhaustive database for hedge funds, and their overall universe is not observable. At best, hedge fund indices will measure what can be measured, i.e. the behaviour of a *sample* of hedge funds that have agreed to report to a database. This database can be commercial (TASS, HFR, MAR, etc.), proprietary, or a mix of both. It may count several hundred or several thousand funds. But whatever its origins, it will always provide a *partial* and therefore *biased* representation of the overall universe of hedge funds. Let us now discuss some of these biases.

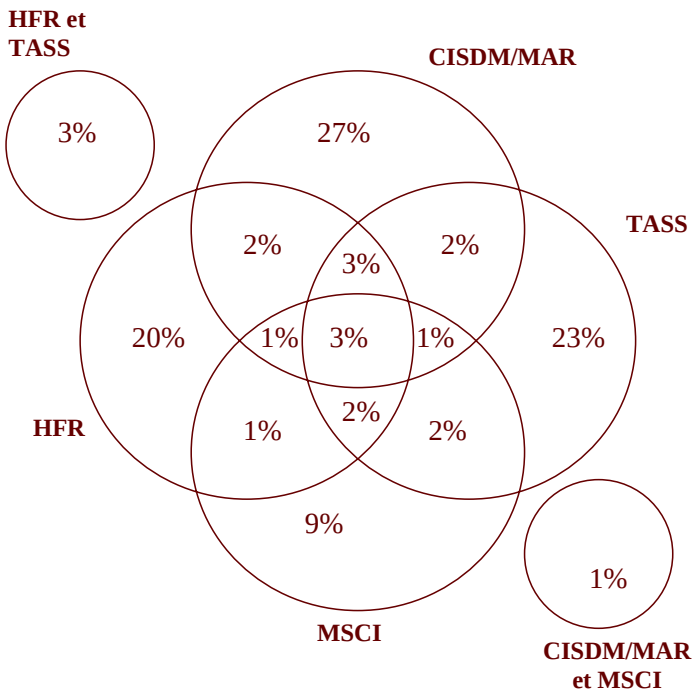
Self reporting bias: Databases can only track hedge fund managers that voluntarily submit their return data. Unfortunately, not all managers are willing to provide information. Larger funds which have reached capacity – sometimes from day one of their existence – do not need to report to a database, while smaller funds have a strong incentive to spontaneously contribute returns information to databases because it will increase their visibility, put them on the radar screen of consultants and eventually attract new investors if their performance is good. Conversely, small fund managers with sub-par performance will not report to databases because they do not want to compare badly with better performing peers. Since the performance of hedge funds that choose to report may be systematically different from the performance of non-reporting hedge funds, databases will generally not constitute a true random sample of the general hedge fund population, and this may bias returns.

Database selection bias: Choosing to work with a specific database to build an index is a second source of sampling bias. Each database usually only accepts hedge funds that meet some specific criteria, such as a minimum asset base, an audited track record, or a few years of existence, etc. Although sometimes justifi-

able from a portfolio management perspective, these criteria are likely to create blind spots in terms of universe coverage. For instance, a database that imposes at least a two-year track record will systematically ignore poorly performing young funds, as they will never survive long enough to reach the two year threshold and enter the database. Some databases also explicitly exclude some strategies from their universe (e.g. managed futures, funds of hedge funds, etc.). Depending on the database selected and its underlying selection criteria, the universe coverage will vary greatly.

The problem is particularly acute due to the heterogeneity between various databases. Some hedge fund managers may accept report to one database, eventually two, but rarely to three or more databases. Consequently, each database will cover only its own universe, and the indices extracted from different databases will not statistically represent the same underlying managers. Of course, it is possible to reduce this bias by aggregating several databases, but very few index providers do it – they only use one source of information. As an illustration, Figure 1 represents the hedge funds in four leading databases, namely Hedge Fund Research (HFR), Morgan Stanley Capital Indices (MSCI), TASS, and CISDM (formerly Managed Account Reports). The percentage in each overlapping area indicates the number of hedge funds that belong to this area relative to the total size of the sample created by the four databases. For instance, only 3% of the overall sample belongs to the four databases. By summing these percentages, one can obtain the percentage of the overall sample covered by each database. For instance, the funds in the MSCI database only represent 20% of the overall sample, versus 35% for HFR, 39% for TASS and 40% for CISDM. Clearly, each database has a long way to go in order to cover a large portion of the hedge fund universe.

Figure 1: Intersection between various hedge fund databases



Survivorship bias: Survivorship bias results from the tendency of defunct funds to be removed from databases as soon as they stop reporting. Consequently, when analysing the funds present in a database on a given date, one only can only observe survivors. Return statistics drawn from these databases are therefore conditioned by survival. Performance may be overstated, while risk figures may be understated – if one accepts that the majority of hedge funds disappear for performance reasons. Note that some databases (e.g. TASS and HFR) are now maintaining defunct hedge funds in their dataset, or have agreed to move them in a dedicated dataset (the "graveyard") that is available, usually against an additional fee. This is good news, because it will solve the survivorship bias problem at the database level going forward. However, survivorship bias will still exist prior to the implementation of that decision. In the best case, survivorship bias will only affect the period prior to the inception of the database – remember databases can only observe surviving funds when they start.

The academic literature estimates that survivorship bias increase returns from 0.16% to 6.67%, p.a. depending on the observation period, the database or even the definition used to calculate the survivorship bias – some researchers analyse the return of dead funds versus surviving funds, while others compare all funds (dead and alive) to surviving funds – see Table 2. The magnitude of survivorship bias varies also greatly across strategies. According to Malkiel and Saha (2005), survivorship bias is as high as 15.24% p.a. for emerging market funds and 14.97% p.a. for global macro funds, but as low as 2.55% p.a. for funds of hedge funds.

Although these numbers are calculated at a database level and not at a hedge fund index level, it is obvious that indices will, at the time of their creation, inherit some of the survivorship bias from the database on which they are built. Indeed, when they are created, hedge fund indices only include funds that are in activity. Any performance prior to the index creation date is back-tracked from these surviving funds and is therefore biased.

Table 2: Estimates of the survivorship bias on return in various academic studies

Authors	Database	Period	Survivorship Bias (%, p.a.)
Comparisons of all funds versus surviving funds at the end of a sampling period			
Ackerman et al. (1999)	HFR & MAR	1988-1995	0.16
Anjilvel et al. (2000)	FRM	1990-2000	2.20
Baquero et al. (2005)	TASS	1994-2000	2.11
Bares et al. (2004)	FRM	1996-1999	1.30
Barry (2003)	TASS	1994-2001	3.70
Brown et al. (1999)	US Offshore Hedge Fund Directory	1990-1996	2.75
Caglayan et Edwards (2001)	MAR	1990-1998	1.85
Capocci et al. (2004)	HFR & TASS	1994-2000	1.22
Das (2003)	ZCM	1989-2000	2.16
Edwards et Liew (1999)	MAR	1982-1996	1.91
Fung et Hsieh (2000)	TASS	1994-1998	3.00
Kazemi et al. (2002)	n.m.	1998-2000	2.17
Liang (2000)	HFR	1993-1998	0.39
Liang (2000)	TASS	1993-1998	2.24
Liang (2003)	ZCM	1994-2001	2.32
Comparisons of all funds versus surviving funds until the end of a sampling period			
Amin et Kat (2003)	TASS	1994-2001	1.77
Brown et al. (1999)	US Offshore Hedge Fund Directory	1990-1996	0.75
Das (2003)	ZCM	1989-2000	1.32
Malkiel et Saha (2005)	TASS	1996-2003	3.75
Comparisons of surviving funds versus defunct funds			
Darst (2000)	MAR	1995-1999	1.15
Malkiel et Saha (2005)	TASS	1996-2003	6.06

Backfill/instant history bias: Funds entering a database are often allowed to import their track record *if they want to*. This essentially grants a free option to managers, namely, the option to incubate a hedge fund and wait for strong performance before volunteering to report to a database. Once these funds enter the database, their performance history is instantly backfilled, producing an upward return bias. Fortunately, this bias is relatively easy to detect by comparing (i) the date at which a fund entered in a database; (ii) the inception date of the fund and (iii) the date at which the track record starts. The academic literature has produced several estimates of the instant history bias on performance, which range between 0.05% and 4.35% p.a. – see Table 3. The estimates vary based on the database considered, the period examined, and the methodology - some researchers have assumed fictive incubation periods, while others are really using the effective backfilled period. The backfill bias seems to affect the majority of hedge funds to some extent. For instance, Barry (2003) observed that 80% of hedge funds in the TASS database are backfilled at least six months of data, 65% of all funds backfilled at least 12 months and 50% backfilled more than two years. More worrying is Liang's (2000) observation that out of the 465 funds listed in common by HFR and TASS, only 154 (or 33.1%) have the same starting date in both databases – maybe some managers want to avoid revealing blemishes.

Table 3: Estimates of the instant history bias in various academic studies

Authors	Database	Period	Assumed incubation period (in months)	Estimated bias (% p.a.)
Ackerman et al. (1999)	HFR et MAR	1988-1995	24	0.05
Barry (2003)	TASS	1994-2001	12	1.40
Brown et al. (1997)	TASS	1977-1996	27	3.60
Caglayan et Edwards (2001)	MAR	1990-1998	12	1.17
Capocci et al. (2004)	HFR	1984-2000	12/24/36/60	0.96/2.76/3.48/4.20
Fung et Hsieh (2000)	TASS	1994-1998	12	1.40
Malkiel et Saha (2005)	TASS	1996-2003	Depends on funds	5.55
Posthuma et al. (2004)	TASS	1996-2002	Depends on funds	4.35

2-2 Index biases

All commercial and proprietary hedge fund databases are affected to some extent by the biases mentioned in the previous section. Since at best, a hedge fund index will be representative of the database it is extracted from, it is likely that all hedge fund indices are also biased. Unfortunately, in the absence of an exhaustive hedge fund database, there is no effective solution. Index providers must therefore continue to rely on one or several databases, and accept that their indices will inherit some of the underlying biases. Then, the next focus should be on their index's construction rules. Unfortunately, the debate on how hedge fund indices should be constructed is still active and sometimes highly subjective. The index providers' choices are therefore likely to generate additional biases.

Manager sample bias: A few indices have no set criteria and include all hedge funds present in their underlying database. However, the majority of index providers use only a sample of hedge funds from their database to create their index. For instance, some providers only consider offshore funds, require a minimum asset size, a minimum track record, exclude closed funds, etc. As a result, the samples used to build the various indices vary significantly across index providers. This raises serious concerns on their ability to adequately represent the whole universe, particularly in the case of small-size indices. In facts, how could one claim that 60 or 100 hedge funds are going to be representative of a universe of 8,000 managers, or even representative of the few thousand funds found in a database? Moreover, this also raises concerns on their ability to measure the same information. We saw that there was very little overlap between hedge fund databases, but the overlap is likely to be even smaller between samples from different databases.

Defunct fund bias: When a hedge fund becomes defunct, it normally exits from all indices where it was included going forward. However, a few index providers (e.g. HF Net, MSCI)) also had the great idea of removing defunct funds going backward. That is, they adjust ex-post the official historical performance of their index as if it had never included the defunct fund. Since the majority of defunct funds are poor performers, this re-calculation biases upward the performance of the index. This is great for marketing purposes, but unacceptable from a performance measurement point of view. Moreover, it also means that the index's historical track record changes regularly.

Weighting scheme: As shown by Fung and Hsieh (2000, 2002), weighting differences alone can explain performance differentials of up to 7.4% in a hedge fund index in a single year. By convenience, most index providers equally weight the performance of their underlying hedge funds when they calculate the performance of their index. They often argue that an equally weighted index avoids favouring large funds or successful ones that are attracting significant capital flows. However, an equally weighted index only provides the performance of the *average manager* in their sample. Is this really what investors want? Should a one billion dollar hedge fund be treated the same way as a one million dollar hedge fund? In addition, using an equally weighted index implicitly corresponds to following a contrarian strategy, i.e. regularly selling the funds that outperformed their peers and buying the funds that underperformed their peers – a strategy that most investors would disagree with. Alternatively, some index providers use the median fund return, i.e. their index is defined as the performance of only one fund, the median one. But is this median fund really representative of the performance of the underlying assets? In our opinion, asset weighted indices are preferable, because (i) they correspond to a buy and hold portfolio; (ii) they attribute more weight to larger funds, which is a standard practice in the universe of stock indices; and (iii) the resulting index tracks the performance of the *average dollar* invested in its components. Unfortunately, very few hedge fund index providers offer asset weighted indices, because their calculation requires more data maintenance.

Classification bias: In the case of single-strategy hedge fund indices (e.g. long short equity, global macro, etc.), or composite hedge fund indices whose construction require a split of the universe in single-strategies, achieving a correct classification of the funds in the underlying database is crucial. Unfortunately, most index providers tend to accept hedge fund managers' self-proclaimed strategy with no check for consistency or historical changes. Others simply classify a fund according to the strategy in which the largest percentage of its assets is currently invested. Very few index providers use statistical techniques such as cluster analysis or style analysis to validate their classification. This raises suspicion on whether single-strategy indices can truly be representative of what they are attempting to measure.

Table 4: Characteristics of non-investable indices

	Nb of funds in database	Nb of funds in index	Classification	Number of indices
Altvest	2600	2600	Manager	14
Barclays	2450	2053	Internal	18
Bernheim	+900	18	?	1
Blue X	400	30 to 40	Internal	1
CISDM/MAR	2300	+1280	Manager	19
CS/Tremont	3300	431	Both	14
Dow Jones	300	35	Internal	6
EACM	100	100	Internal	18
Edhec	n.a.	n.a.	n.a.	13
Eurekahedge	365	110	Internal	3
Feri	+5000	41	Internal	16
FTSE	6000	40	Internal	1
Hennessee	3500	+690	Both	24
HF Intelligence	3202	2652	Both	45
HF Net	+2300	+2300	Manager	37
HFR	+2300	+1400	Manager	37
LJH	+800	+800	Internal	16
MondoHedge	720	48	Both	7
MSCI	+1800	+1500	Both	>190
RBC	+4700	254	Internal	1
S&P	3500	40	Internal	10
TalentHedge	?	5 to 20	Internal	2
Van Hedge	+5400	1300	Internal	16
Zurich	+1200	49	Internal	5

2-3 Consequences

The consequence of this cacophony of index construction approaches is an extreme heterogeneity of hedge fund indices in terms of performance, even when they are supposed to measure the same information. For instance, Amenc and Martellini (2003) analysed thirteen different style indices drawn from major index providers and observed performance divergences of up to 22.04% in a single month for competing long/short equity indices. Even worse, some indices supposedly measuring the same strategy were negatively correlated to each other[4]. This lack of coherence is confusing investors and casts serious doubts on the possibility of using hedge fund indices as yardsticks in performance measurement or as inputs for a strategic asset

[4] Of course, these discrepancies are higher at the single strategy level than at the composite index level, because the various biases are smoothed across different strategies. But they are also likely to be found in between composite indices that are based on a limited number of hedge funds.

allocation. As summarized by one analyst: “Tell me the results that you want to obtain, and I will tell you which index you should use…”

Table 5: Month with the largest performance spread between hedge fund indices

Strategy	Month	Worst index performance (%)	Berst index performance (%)	Spread (%)
Convertible arbitrage	Oct-98	CS: -4.67	Henessee: 0.08	4.75
Dedicated short	Feb-00	Van Hedge: -24.3	EACM: -3.09	21.20
Distressed securities	Aug-98	HF Net: -12.08	Van Hedge: -4.70	7.38
Emerging markets	Aug-98	MAR: -26.65	Altvest: -7.2	19.45
Event driven	Aug-98	CS: -11.77	Altvest: -6.71	5.06
Fixed income arbitrage	Oct-98	HF Net:-10.78	Van Hedge: 0.2	10.98
Funds of funds	Dec. 99	MAR: 2.41	Altvest: 10.42	8.01
Global macro	May-00	Van Hedge: -5.80	HF Net: 12	17.80
Long-short equity	Feb-00	EACM: -1.56	Zurich: 20.48	22.04
Market neutral	Dec. 99	Henessee: 0.2	Van Hedge: 5.2	5.00
Merger arbitrage	Sep-98	Altvest: -0.11	HFR: 1.74	1.85
Relative value	Sep-98	EACM -6.07	Van Hedge: 4.40	10.47

Source: Amenc and Martellini (2003).

Of course, several suggestions have been proposed for overcoming problems associated with indices of hedge funds. Let us briefly mention some of them.

- Create a new hedge fund index with the aim of avoiding the aforementioned biases. However, unless one starts with *the* exhaustive database of hedge funds this seems a rather challenging path. So far, no index specialist and no hedge fund specialist have succeeded creating the universally accepted benchmark, so why would it be different with another index?
- Select an index and adjust its returns for the various biases they have identified. For instance, if the survivorship bias in a given database is 1.2% p.a., simply withdraw 10 basis points very month to all indices calculated from this database. This rule of thumb is acceptable when dealing with averages over a long time period, but it is not really satisfactory when some serious time series analysis needs to be performed.
- Ignore hedge fund indices, which are fictive representations, and use instead a fund of hedge fund index, which corresponds to money effectively invested. Fund of hedge fund indices are less likely to be affected by issues such as survivorship bias or backfilling bias, because an audited fund of hedge funds cannot erase the record of an underlying fund blowing up from its performance. Unfortunately, this approach suffers from three shortcomings. First, funds of hedge funds are by definition actively

managed portfolios, while we would like to measure the result of a passive exposure to hedge funds. Second, funds of hedge funds add an extra layer of fees in the equation. And third, fund of hedge funds indices also suffer from an important heterogeneity – as illustrated in Table 4, the discrepancy between the best and the worst index over a single month can reach 8 percent[5].

- Using the existing hedge fund indices to build a *more representative* index. In a sense, each index is seen as a mix of relevant information, specific biases and some noise. This is very similar to a single stock, where we have market risk, specific risk and some noise. By pooling stocks in a portfolio, specific risk and noise are diversified away, while market risk remains. Similarly, if we pool together several indices in a portfolio of indices, the individual biases and noises will be diversified and the relevant information will emerge. The resulting portfolio of indices will always be more representative than any of its constituents (it covers more funds), but also less biased. Moreover, as soon as a new hedge fund index is created, it can immediately be included in the portfolio to enhance its quality.

Note that the latter solution is the approach used by EDHEC to produce pure-style hedge fund indices, which are in a sense weighted averages of existing hedge fund indices. However, rather than using a simple average of the existing indices (e.g. equal weightings), EDHEC derives its index weights by using a statistical technique called principal component analysis. This technique aims at capturing the maximum portion of the *common* information across hedge fund indices while eliminating the biases that are specific to each index. Statistically, the result is the weighted average of existing *hedge fund indices* that gives the *best possible summary* of all the considered hedge fund indices whilst filtering out noise.

[5] There is not yet an index measuring the performance of funds of funds of hedge funds, although the underlying population is growing…

3 - Investing in a hedge fund index

Hedge fund indices have initially emerged in response to the desire by investors and industry participants to benchmark the performance of hedge funds. However, finding a representative hedge fund index is only the first party of the story. If investors really like the index, they want to be able to buy it[6]. After all, who would trust the performance of an index if no one can buy it?

Indexing has long been an ideal method of achieving a broad-based low-cost passive exposure to an asset class. It has been applied successfully in stocks and bonds, and it is natural that investors seek to extend it to hedge funds. Unfortunately, tracking hedge fund indices is far from simple and raises several issues.

- Most hedge fund indices are not transparent. They do not disclose the list of their components, their weights, or even their construction methodology. This significantly complicates the work of a third-party indexer, unless he benefits from privileged information from the index provider.
- Most hedge fund indices are partially made up of funds that are already closed to new investment, or will be closed at some point in the future once they reach their maximum capacity. A full replication (i.e. buying all the components in the index) is therefore often not feasible.
- Traditional indexing approaches (i.e. regularly rebalancing a portfolio of hedge funds to minimise the tracking error with respect to some index) are not applicable in practice because of the lack of liquidity of the underlying funds (lock-ups, redemption notice periods, etc)..
- Attempts to replicate the returns of hedge fund indices by dynamically trading traditional assets such as stocks and bonds, or even futures and options, result usually in significant tracking errors, essentially because the target is an index of *actively managed portfolios*. Thus, although the content of the index does not seem to change in terms of funds, its content in terms of individual securities and their key characteristics change continuously[7].
- Most hedge fund indices often produce their net asset value with a considerable delay, e.g. three weeks after the end of the month. This means that a third-party indexer is always late to rebalance his tracking portfolio – he can only measure his tracking error with a three week lag.

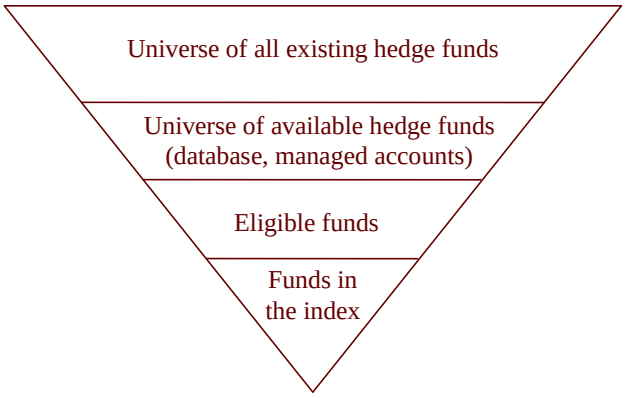
In fact, indexing is sometimes so complicated in the hedge fund universe that several providers have decided to start from scratch with a new methodology and create specific *investable indices*. At the time of the writing, we have counted 9 investable hedge fund index providers, namely CS/Tremont, Dow Jones, EDHEC[8], FTSE, HFR, MSCI, Royal Bank of Canada (RBC), Standard & Poor's (S&P) and Van Hedge. The latter has been ignored in the following discussion due to its extreme lack of transparency.

[6] Ideally, for the completeness of the market, it would be desirable for investors to be able to short-sell an index if they do not like it.
[7] Note that a few interesting academic papers have recently claimed that replicating the return distribution and correlation characteristics of hedge funds was possible. Reality is that these approaches do not replicate the day-to-day performance of hedge funds, but their return distribution at the end of a given time horizon and their co-relation with other asset classes over a given time horizon. Gains and losses of the replicating portfolio can therefore be distributed very differently over time with respect to those of the tracked index.
[8] Note that there is currently no product tracking the EDHEC index.

4 - A simpler path: investable indices

It is essential to understand that the primary aim of investable hedge fund indices is not to cover the largest possible number of hedge funds. Indeed, the hidden agenda of their providers is ultimately to license their index to partners who can then create investable products. These products track the index by investing in a weighted portfolio of its constituents – similarly to how a mutual fund tracks the performance of an equity index. To achieve this goal and simplify the tracking exercise, index providers have an incentive to select only a *limited number* of liquid hedge funds. Needless to say, their approach is also subject to numerous biases.

Figure 2: The selection process to identify the funds that enter in an index



Sub-representativity: Because they ultimately need to end up with an easy to manage product, investable index providers impose very strict requirements in order to select the funds that are eligible to enter their index. Selection criteria such as minimum length of the track record, minimum assets under management, sufficient liquidity, absence of lock-up period, daily or weekly valuation, transparency on the underlying positions, willingness to accept additional investors and commitment to provide sufficient capacity are common[9]. These requirements might facilitate product management, but the problem is that very few hedge funds fulfil them. In particular, the best performing funds, the most desirables typically have long-term lock-ups and display DNA-level aversion to the idea of indexing. They will not make a single effort to enter an index, to the contrary. Consequently, the set of eligible funds will only represent a small subset of the entire hedge fund universe – much smaller than the subset used for non-investable indices. As an illustration, the RBC Hedge 250 Index, which counts 250 funds, captures only approximately 20 per cent of total hedge fund assets under management. Investable indices will therefore always be *less representative* than their non-investable cousins. At best, they could match their representativity, but will never improve it. Not surprisingly, the trade-

[9] *Initially, some providers even went one step further and attempted to select funds that did not belong to another investable index.*

off will often be between representativity (including more funds to be more representative) and investability (using fewer funds to facilitate index tracking).

Due diligence bias: Due diligence is a critical requirement to improve the quality of an actively managed hedge fund portfolio, due to the relative opacity and non-regulated nature of its components. However, it is highly questionable in the context of indexing. For instance, could one imagine Standard & Poor's refusing to introduce a large listed U.S. company in the S&P 500 on the claim that its operations are not state of the art, or that the quality of its management is insufficient to run the company? Not really. Nevertheless, most investable index providers have mandated third party consultants to run some due diligence on funds that are eligible to enter their index. And this due diligence is not only limited to the appropriateness of the strategy or the validation of the track record; it also applies to portfolio management aspects, risk management, the level of leverage, the use of derivatives, etc. This clearly cast doubts on whether we are in a "passive" versus an "active" selection of managers.

Table 6 : Key characteristics of investable indices

Index Provider	Nb of funds in database (approx.)	Nb. of eligible funds (approx.)	Nb. of funds in index (approx.)	Pricing	Initial diligence performed by	Separately-managed Accounts	Requirements
CS/Tremont	3300	420	60	Monthly	Tremont	No, uses actual hedge funds	Member of the non-investable index / accepts new investments and redemptions / initial investment > $100 000 / not US domiciled / no lock-up period / monthly liquidity with at most one month notice, except for event-driven and convertible arbitrage (quarterly)/ one of the six largest funds in the eligible funds in all ten sectors.
Dow Jones	300	100	35	Daily	Lyra Capital	Apollo Capital Management	Separate managed account / AUM > $50m / track record > 2 years / leverage constraint depending on the strategy.
EDHEC	2300	130	60	Weekly	Lyxor	Lyxor	High correlation with the first principal component calculated from extensive database of hedge funds.
FTSE	6000	75	40	Daily	Harcourt	MSS Capital	AUM before leverage > $50m / track record > 2 years / monthly liquidity / independently audit / open and accepting investor subscriptions / sufficient remaining capacity / hedge funds does not belong to specialist interest strategies.
HFRX	2300		varies	Daily	HFR	HFR	Open for investment / daily transparency / pass extensive qualitative screening and due diligence.
MSCI	105		97	Daily	Lyxor and MSCI	Lyxor	Pass due diligence / agree to offer frequent liquidity and sufficient capacity / agree with MSCI on the classification / funds should have other significant investors outside of those tracking the index.
S&P	4700		40	Daily	Albourne Partners	PlusFunds	Separated account / AUM > $75m / Track record > 3 years / Additional investment capacity > $100m.
RBC	3500	300	254	Monthly	RBC	No, uses actual hedge funds	AUM > $10m / can be categorised into one of the nine sub-strategies / has a US$ class / redemptions no less frequently than annually / max. 65-day notice to redeem / domiciled outside of the US / lock-ups up to one-year / monthly subscriptions / track record of at least 6 months / dealing dates scheduled on the first or last business day of a month / no redemption fee after 1 year / no subscription fee / minimum initial investment amount no greater than $250,000, minimum subsequent investment amount no greater than $50,000, and minimum redemption amount no greater than $50,000 / no limit to the amount of redemptions over a particular period / offers investments eligible to restricted persons for purposes of “new issues” as defined in NASD Rule 2790/ passes a fund review process.

Managed account bias: In order to secure minimum capacity and liquidity on the components of their investable indices, most index providers have signed partnerships with managed account platforms[10] (MSCI/ Lyxor, S&P/PlusFunds), or even developed their own platform (HFR). Although managed account platforms are aggressively marketed by their creators and promoters as the optimal way to invest in hedge funds, the reality is somehow different.

- The number of fund managers willing to offer managed accounts is rather limited. Consequently, index providers see their investment universe shrink from several thousand hedge funds to whatever is available on a given platform, i.e. usually between 30 and 150 managed accounts. This raises additional concerns on the representativity of such a small sample, but also on the quality of the corresponding managers – given the high demand for quality hedge funds, why would a manager accept the additional burden of a managed account, unless he is really starving for additional assets?
- Managed account platforms have liquidity and transparency requirements that are incompatible with some hedge fund strategies. Consequently, some strategies are often excluded from the offer, and therefore, from the corresponding investable index (e.g. MSCI does not consider distressed securities).

To illustrate our concern with the managed account bias, we can simply consider the list of some of the largest hedge fund worldwide, and observe that very few of them are members of any investable index. For instance, the top 25 hedge funds worldwide managed more than $300 billion at the end of 2005, but only four of them were represented in investable indices. CS/Tremont had the four, MSCI had two of them, HFR and S&P had only one, and Dow Jones and FTSE had none of them.

Pro-forma bias/active selection of past winners: Historical performance is a good "predictor" of the past, but it is also useful to attract assets and market a product. Since investable hedge fund indices are created with the implicit goal of launching a tracking vehicle, it is essential that their historical pro-forma performance looks good. Index providers have therefore a tendency to select index members among the funds with a good track record, although this does not guarantee a good performance in the future. As simple comparison between investable and non-investable indices of the same provider immediately *before* and *after* their creation clearly illustrates the *pro-forma out-performance* of the investable index, followed by its *real under-performance*. Note that this bias does not affect the CS/Tremont index, whose components are only selected based on their asset size and liquidity, and the EDHEC index, whose components are selected based on their correlation with the target index.

[10] *A managed account is a discretionary account where a client has given specific written authorization to a hedge fund manager to select securities and execute trades on a continuing basis and for a fee. Most of the time, the managed account closely mirrors what the main fund of the manager is doing.*

Classification bias: The construction of most investable indices involves at some point a split of the hedge fund universe by strategies, before looking for the individual candidates in each strategy. However, methods of classification vary among index providers. Some of them rely on clustering and other quantitative analyses (e.g. Dow Jones, HFR, S&P), others base their decision on the results of due diligence (e.g. FTSE), while the rest use the managers' self-proclaimed styles and eventually validate them by an index committee (e.g. CS/Tremont, MSCI).

Weighting bias: As for the non-investable indices, there is no consensus on the adequate weighting scheme, either at the strategy level or at the fund level. Some index providers have opted for equal fund weighted indices, equal strategy weighted indices (e.g. S&P) while others preferred value weighted with a cap (e.g. CS/Tremont), "investability weighted" indices (e.g. FTSE) or optimised weights (e.g. HFR[11], EDHEC[12]). In our view, asset weighting is largely preferable to equal weighting – as it is the case for traditional indices such as the S&P 500, the Nasdaq and the Russell. It is even more important in small-size indices in order to avoid giving a small fund a disproportionate weight. It also reflects the capital changes in the industry, and capital allocations have changed a lot – remember global macro used to represent two-third of the assets in the 1990's. Optimised weighting needs to be examined on a case by case basis.

Table 7: Key characteristics of investable indices

Index Provider	Launch date	Start date	Number of indices	Strategy Weighting	Fund Weighting	Rebalancing
CS/Tremont	Aug. 03	Jan. 00	10 + composite	Asset weighted	Asset weighted	Semi-annual
Dow Jones	Nov. 03	Jan. 02	5	n.a.	Equal weighting	Quarterly
EDHEC	Apr. 05	Apr. 02	5	n.a.	Optimised weights	Quarterly
FTSE	Apr. 04	Jan. 98	11 + composite	Investability weighted	Investability weighted	Annual
HFRX	Mar. 03	Jan. 00	8 + composite	Asset weighted	Optimised weights	Quarterly
MSCI	Jul. 03	Jan. 00	1	Adjusted median asset weighted	Equal weighting	Quarterly
RBC	Jul. 05	Jul. 05	9 + composite	"representative of each strategy in the universe"	Equal weighted	Monthly
S&P	May 02	Jan. 98	5 + composite	Equal weighted	Equal weighting	Annual

[11] *The weights are obtained by an optimization process drawing into account the correlation of individual funds with a portfolio of funds representing a pure strategy. They can be adjusted on a case by case basis in order to reflect the remaining capacity to collect new assets.*

[12] *Those weights are optimized with a view to obtain a high correlation with the first principal component established on the basis of a database of hedge funds.*

Other biases: The number of funds in the investable index varies significantly among index providers. This creates an additional question mark regarding their representativity, due to the large existing heterogeneity among funds that pursue the same strategy. As do the rebalancing frequencies – some index providers prefer to react to new trends and allow for quarterly style rebalancing (e.g. MSCI, Dow Jones, HFR), while others favour stability and only rebalance the index on a semi-annual or annual basis (e.g. CS/Tremont, FTSE, S&P).

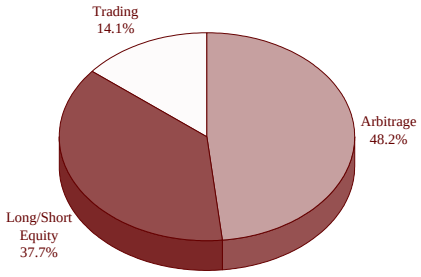
5 - Investable indices or fund of hedge funds?

Despite the fact that they are supposed to measure *passively* the same universe, investable hedge fund indices display considerable differences in their strategic exposures. Consider for instance the long short equity strategy. According to all databases, it is the largest hedge fund strategy, both in terms of number of funds and in terms of assets under management. However, its weight varies from only 11.1 per cent of the S&P Index to the 37.7 percent of the HFRX Index.

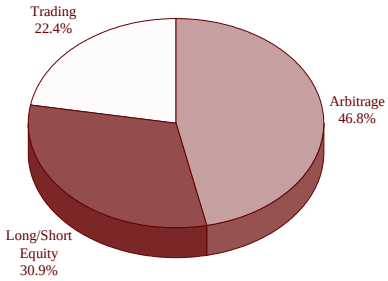
Figure 3 : Strategic exposures of various investable hedge fund indices (Q1-2006)

Note that FTSE and EDHEC do not disclose their asset allocation in terms of individual funds.

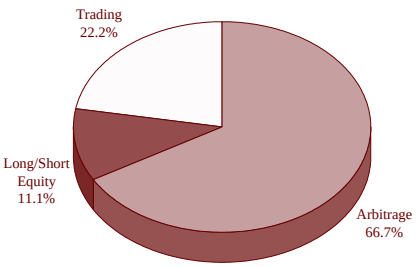
HFRX Index



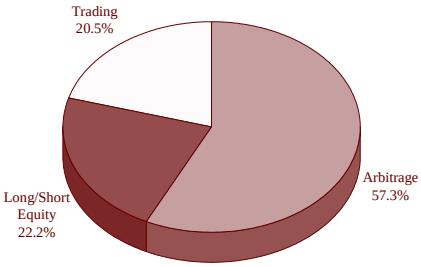
MSCI Index



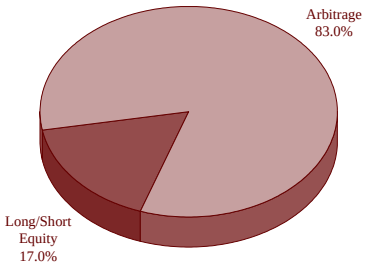
S&P Index



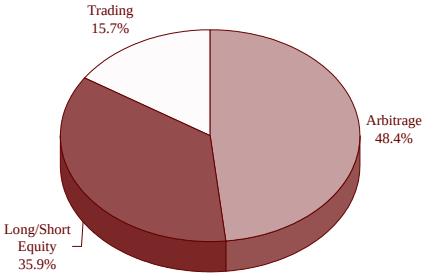
CS/Tremont Index



Dow Jones Index



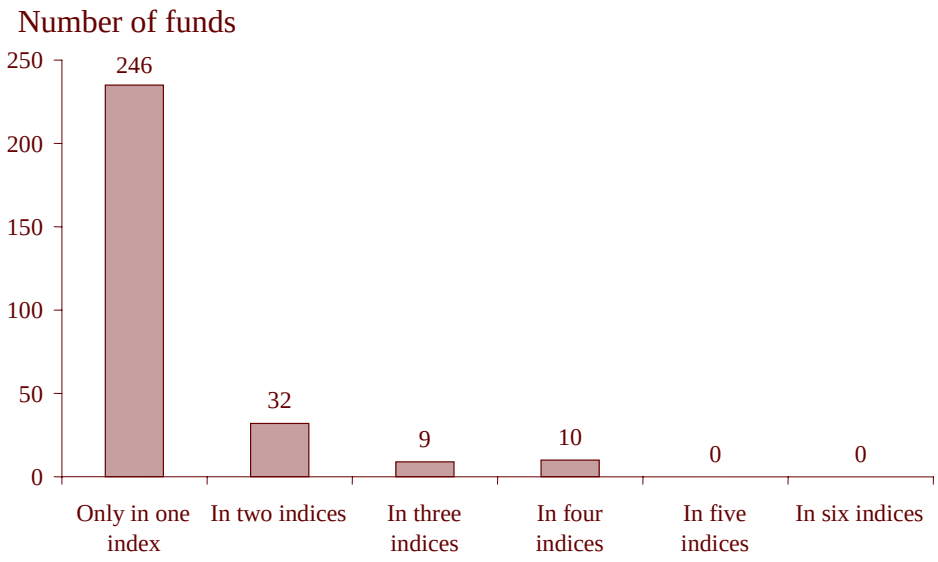
RBC Index



But the disparity between investable indices is even more visible when one considers their individual components. At the end of March 2006, there were 297 distinct hedge funds/managed accounts in the six investable indices. The large majority of them (246 funds) were only found in one index, 32 funds were members of

two indices, nine funds were in three indices, and 10 funds were in four indices. And no fund was found in more than four indices – see Figure 4.

Figure 4 : Number of funds in the intersection between various investable hedge fund indices, as of March 2006



The overlap between two different investable indices seems rather small – on average, only 7.8 per cent of the funds covered by two investable indices are common to both of them.

Table 8 : Number of funds in the intersection between two investable hedge funds indices

	HFR	MSCI	S&P	CS/Tremont	FTSE	Dow Jones
HFR	78					
MSCI	14	129				
S&P	10	9	36			
CS/Tremont	8	9	8	60		
FTSE	8	12	8	2	40	
Dow Jones	8	6	7	3	7	34

HFR	100.0%					
MSCI	7.3%	100.0%				
S&P	11.0%	6.3%	100.0%			
CS/Tremont	6.2%	5.0%	10.7%	100.0%		
FTSE	7.3%	7.6%	14.5%	2.0%	100.0%	
Dow Jones	7.7%	3.8%	14.0%	3.3%	10.4%	100.0%

The top table shows the number of hedge funds in each intersection, the bottom table shows the percentage of the overall universe formed by the two indices that is common. Note that the EDHEC index is based on indices rather than funds and is therefore not represented.

These differences in terms of strategic allocation and managers result in important differences in terms of performance, which are comparable to those observed between *actively managed* funds of hedge funds. At this stage, the question becomes natural. Given that the efforts deployed for compiling most investable indices are not focused on better representing the hedge fund universe, but rather focused on creating an investable product with carefully selected managers, an attractive back-tested performance and sufficient capacity, one might ask what is the difference between these investable hedge fund indices and actively managed funds of hedge funds.

Indeed, the difference is almost non-existent. Investable indices are often more secretive than some funds of hedge funds, and some of them are even more active than funds of hedge funds – they regularly exclude or include funds with very different characteristics without any real justification[13]. The only significant difference resides in the type of portfolio management applied at index level – manager and strategy weightings are systematically derived via some arbitrary principles. But is this sufficient to be called an index? We do not think so. In our opinion, investable hedge fund indices are disguised fund of funds that use the label "index" for their marketing efforts.

Table 9 : The cost of buying a hedge fund investable index

CS/Tremont			
	Index certificates	Monthly	1.40% p.a.
	Index certificates (SWX listed)	Quarterly at NAV, continuous on SWX	1.40% purchase cost, plus 1.06% p.a.
FTSE			
	Investments in funds managed by MSS Capital	Monthly, 35 days notice	1.06% p.a.
HFR			
	Investments in funds managed by HFR	Monthly, 15 days notice More frequent trading available at a cost	1.35% p.a. (negotiable down to 0.35% for more than $50 million)
	Index certificates	Continuous on SWX	1.20% to 1.40% purchase cost (bid-ask), plus 2% p.a. (negotiable down to 1% for more than $10 million)
MSCI			
	Investments in funds managed by Lyxor	Weekly, 1-week notice	1.40% to 1.50% p.a.
S&P			
	SphinX	Quarterly, 65 days	1.50% p.a. (negotiable)

[13] *As an illustration, Duc (2004) mentions the case of the Jemmco Fund that was excluded from the S&P hedge fund index and replaced by the GLC Gestalt Europe Fund. The former fund did statistical arbitrage models in US stocks, while the latter does pair trades on European stocks. It is hard to understand how one can replace the other in terms of representativity.*

6– Hedge fund indices in an UCITS perspective

To be eligible as an UCITS III investment, hedge fund indices would need to comply with the three criteria as set by Art. 22a(1) of the Directive, namely (i) to be sufficiently diversified, (ii) to represent an adequate benchmark for the market to which they refer and (iii) to be published in an appropriate manner – see Appendix A. In practice, the majority of currently existing hedge fund indices do not comply with these three properties.

Sufficient diversification: Most hedge fund indices *appear* to be well diversified, when one considers the number of hedge funds they include. As shown by Lhabitant (2004), ten to fifteen hedge funds are sufficient to diversify the risk – remember these are funds, not securities. But in reality, hedge fund indices are often subject to an *operational* concentration of risks, particularly when they use managed account platforms, which is equivalent to say that they only have *one* counterparty in the market. What if the managed account platform experiences difficulties? This risk was considered as negligible until 20 December 2005, when the PlusFunds platform (which makes the S&P Hedge Fund Index investable through separately managed accounts with the underlying managers) sent a letter to its investors. This letter revealed potential exposure to Refco's bankruptcy, as the PlusFunds directors had allowed a transfer of assets from the bankruptcy-protected and regulated futures unit of Refco to Refco Capital Markets (an unregulated offshore broker/dealer). Until the Refco legal issues are resolved, shareholders can only redeem a portion of their money[14]. A similar situation could occur at any managed account platform.

Adequate benchmark: Due to the biases in their methodology, most hedge fund indices and particularly investable indices cannot be considered as representative of the hedge fund universe. They do not cover a significant portion the hedge fund universe, they do not include the largest funds, and they are not asset weighted. The industry has in practise not been able to establish an unambiguous way to classify and select hedge fund managers, and thus cannot yet fulfil most or all of the fundamental criteria for appropriate benchmarking.

Appropriate publication: Very few hedge fund indices are published in an "appropriate manner". EDHEC, HFR, MSCI and RBC are not transparent on their components. The FTSE provides only the name of the firms managing their vehicles, but not the names of the funds. Dow Jones displays the same information but, at least, classifies the firms per strategy. Only CS and S&P make available full details (name of the fund and classification) to the public. And none of them disclose the weights of the hedge funds in their index.

[14] *Note that on 2 May 2006, Standard & Poor's announced that it will not adjust downward the level of its index to take into consideration the value of the settlement between the investment manager for the managed accounts and the Refco Creditors' Committee. This creates a clear distinction between the hedge fund index level and the value of the fund that tracks the hedge fund index…*

In this context, we think it is hard to justify the admission of any existing hedge fund index or its derivative as an underlying asset in a UCITS III fund. Most hedge fund indices have a long way to go in order to fulfil the required criteria. So far, they are built like fund of hedge funds, behave like fund of funds, and some of them even include “index calculation fees”. If, nevertheless, regulators want to approve hedge fund indices as admissible assets, then a list of minimum criteria to be fulfilled by the index candidates should be established beforehand – see Appendix B for some suggestions. Otherwise, the danger is high to see any portfolio of hedge funds pompously calling itself an index and being distributed to the general public, i.e. circumventing of the Directive.

Lastly, another interesting question, although not directly related to the UCITS criteria, but still relevant for regulators, is the macro-economic impact of authorising indices of hedge funds in products accessible to the general public. Conventional wisdom suggests that as more money flows into hedge funds, additional hedge funds will be created. Their managers will be primarily attracted by the idea of charging high fees, but will not necessarily be sufficiently talented to succeed in extracting profits. And as the market becomes more efficient, the portion of skilled managers who can generate incremental returns will decrease. If this expectation is true, then gaining exposure to hedge funds using an index approach implies gaining exposure to a large and potentially growing pool of unskilled managers. This strategy may be a poor use of capital, which will lead to disappointed investors and more generally to a waste of resources. Last but not least, it could also create a large pool of capital with the ability to destabilise markets. The role of regulators is definitely not simple…

6-1 Conclusion

With the rapid growth of hedge funds in the last decade across the globe there has been strong demand for benchmarking tools from investors. Hedge fund indices sound like an oxymoron – how can one imagine a passive representation of the world's most active managers? Nevertheless, numerous hedge fund indices have been created and are now being used … and misused. Around the world, it is estimated that well over $12 billion is invested in hedge funds through index products. Interestingly, the Financial Times reported in February 2006 that 30 percent of the inflows into hedge fund indices came from funds of funds, which suggests these vehicles also have a capacity issue.

Today, well-known brands such as CS/Tremont, Standard & Poor's, MSCI, Dow Jones, FTSE, EDHEC, Royal Bank of Canada and Hedge Fund Research have put their names on investable hedge funds indices, creating a sense of security signalling maturation and demand for standardisation. As a consequence, regulators now have to decide whether indices of hedge funds, and more generally their derivatives, will be eligible assets for the new UCITS III funds and therefore be accessible to the general public.

In our opinion, existing hedge fund indices are currently not representative of the hedge fund universe, not sufficiently diversified and/or not published in an adequate way. They are essentially rule-based fund of funds, with some degree of subjectivity. We therefore think that they currently do not fulfil the necessary criteria to be considered as eligible assets for UCITS III, particularly when one remembers that UCITS III funds may be distributed to retail investors.

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Appendix A - Text of the CESR (2006) interpretation

"For the purpose of applying Art. 1(2) in conjunction with Art. 19(1)(g) first indent, financial derivative instruments on a financial index mean those financial derivative instruments which are based on a financial index which complies with the criteria as set by Art. 22a(1) of the Directive, i.e that the index

- is sufficiently diversified. This implies that:
  - The index should be composed in a way that price movements or trading activities regarding one component do not unduly influence the performance of the whole index;
  - If the index is composed of eligible assets, it should be at least as diversified as set out under the diversification ratios of Art. 22a(2); otherwise its underlying assets have to be combined with the other assets of the UCITS according to Art. 21(3) and Art. 22 in order to avoid undue concentration;
  - If the index is composed of non-eligible assets, it should be at least as diversified as set out under the diversification ratios according to Art. 22a(2), in case the derivatives on indices are used in order to track such an index or to gain high-exposure in such an index, in order to avoid undue concentration. If derivatives on these indices are used for risk-diversification purposes this diversification does not apply provided the exposure on the individual indices complies with the 5/10/40% ratios.

- represents an adequate benchmark for the market to which it refers. This implies that:
  - the index must measure the performance of a representative group of underlyings in a way that is meaningful and useful;
  - the index should be revised or rebalanced periodically to ensure that it continues to reflect the markets to which it refers following criteria which are publicly available;
  - the underlyings should be sufficiently liquid to enable users replicate the index if necessary.

- is published in an appropriate manner. This implies that:
  - its publication process should rely on robust procedures to collect prices (including procedures to price components where a market price is not available) and to calculate and subsequently publish the index value ;
  - the material information on matters such as index calculation and rebalancing methodologies, index change and information relating to any operational difficulties in providing timely or accurate information must be provided on an as wide and timely basis as possible."

Appendix B - Suggestions of minimum criteria for quality hedge fund indices

While hedge fund indices are widely employed, there is surprisingly little discussion of the properties a "good" hedge fund index should possess. Let us suggest and discuss some of them.

Index Guidelines

1. Simplicity: An index should be simple to understand, objective and easy to calculate. Otherwise, its acceptance might be limited.

2. Constituent transparency: In the case of an index based on individual hedge funds, the list of components, their strategy (based on the classification used by the index provider) and the weight assigned to each component should be fully disclosed and readily obtainable. In the case of an index of indices, the list of underlying indices and their weight should be fully disclosed and readily obtainable.

While there are maybe good reasons for an active fund of hedge fund manager to not disclose the content of his portfolio, we believe that there should be no secret in an index's composition.

3. Construction transparency: The methodology for an index construction, e.g. its component selection criteria, its asset allocation rules, its guidelines for altering the index, its components or their weights, should be specified in advance, clearly described and readily available for the investment community. They should be reasonable according to common sense.

Here again, we think that the best way to establish an index is to be fully transparent on its construction methodology. Being open to criticism is only beneficial.

4. Breadth: An index should cover a portion as large as possible of the components deployed in its universe (whether it is a global index or a sub-strategy index).

Ideally, an index should represent 100% of its universe. Although a lower coverage ratio may be accepted due to the particularities of hedge funds, we believe that an index that does not cover at least 50% of the assets deployed in its universe cannot really be called a representative index. It is at best a tracking subset or product.

Estimating the size of the hedge fund universe can be achieved by (i) aggregating hedge fund databases; (ii) collecting information from administrators and prime brokers; and (iii) looking at the largest hedge funds –

remember that the largest 200 hedge funds represented already a combined $743 billion under management at the end of 2005, i.e. more than half of the assets under management by hedge funds. In the case of indices of indices, a similar rule should apply to the underlying hedge funds.

5. Appropriateness: Components that a typical investor would not hold (too small, no track record, no annual audit) may be excluded from the index, but the corresponding rules should be fixed and disclosed explicitly.

In the case of hedge funds, most investors agree that a minimum of $20 million of assets under management is a pre-requisite to be considered as a possible candidate. The track record existence, however, is not as simple. Numerous hedge funds now start from day one with several billion of assets. The absence of a track record condition may therefore be waived if the asset size is large enough and the manager has at least five year asset management experience from his former position. Lastly, the absence of an external performance audit is unacceptable.

6. Representativity: An index return and risk parameters should be representative of those of the components in the investment opportunity set.

The representativity of an index should be assessed quantitatively and disclosed publicly. Criteria such as the percentage of the universe coverage, both in terms of assets and in terms of number of funds, are essential. Note that this should also apply to single-strategy indices as well as indices of indices.

7. Index audit: The prices or returns used to compute the indices should also be available – possibly for a fee – so that index returns can be independently verified.

8. Measurability: The index should be calculated on a reasonably frequent basis and the information should be available in a reasonable amount of time.

The norm in the hedge fund industry is now to have at least weekly estimates and a monthly final net asset value, except for illiquid strategies (distressed in particular). Similar rules and publication delays should apply to the index.

9. Passively managed: The index should forgo active management and discretionary decisions, and should correspond to a passive buy and hold strategy.

The annual turnover rate of the index should be disclosed, as well as any of the changes in terms of components and weights. Each change in the index composition should be announced, explained and documented.

10. Final index values: Once published, the estimated performance of an index may be updated retroactively only during a limited time period.

Hedge funds are characterized by a delay between the publication of their estimated monthly NAV (typically one to seven days after month end) and the availability of their final NAV (up to five weeks after month end). This process should be mimicked at the index level, i.e. there should be an estimated index level (which may be updated subsequently as new funds provide their final NAV) and a final index level. Once the final index is published for a given month, no more changes should be allowed for this month.

11. Stability of performance over time (backfill bias): In no case a change in the composition of an index should imply a change in its past performance.

12. Weighting scheme: Fund-based indices should be asset weighted, eventually with a cap and a floor. This corresponds to the intuitive vision of investing, that is, (i) investors tend to allocate more to larger companies and (ii) in the absence of rebalancing, good performance results in an increase of the relative weight of a company in the index.

13. Investability: Indices do not need to be investable, they need to be representative.

Many existing hedge fund indices are biased and non representative because they are trying to be investable. Reality is that the investment capacity of hedge fund managers (at least those that are actually in a position to provide persistent alpha) will always be a scarce resource, for which investable index providers must compete with other investors (e.g., funds of funds). With an index built using hedge funds, being at the same time investable and representative represents conflicting goals.

Being investable is a product issue, not an index issue. If we had a truly representative hedge fund index, it would be much easier to create trackers and even derivatives markets. After all, temperature indices or real estate indices are not investable either, but they are the underlying assets of derivative contracts simply because market participants agreed on what they represent and measure.

14. Free of fees: Indices should be free of additional fees.

Several investable hedge fund indices are deducting fees from their performance, e.g. an "index calculation" fee, a management fee, etc. Once again, this should not be accepted at the index level. It is a product feature, not an index feature.

We now come to some of the guidelines that should apply to any product tracking a hedge fund index ("tracker").

Product Guidelines

1. Representativity: Each tracker should publicly disclose its anticipated and its realized/back-tested level of tracking error with its reference index, after fees.

We believe that the maximum acceptable level of tracking error should be defined by regulators and be comparable to what is admissible for traditional assets. Regulators should also approve the tracker and define ex-post controls.

2. Access/Counterparties: When not investing directly into hedge funds, a tracker should disclose the way they intend to replicate hedge fund returns, i.e. via trading traditional assets, using managed accounts, etc.

3. Fee transparency: Each tracker should publicly disclose its level of fees.

Ideally, each tracker should disclose (i) the exact fee structure charged by the tracker on top of the hedge fund or managed accounts; (ii) the eventual entry and exit fees. The disclosure should be standardized in terms of a percentage cost for a given initial investment over comparable holding periods.

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