PICTET 1805

Hedge fund indices: how representative are they?

Pictet Alternative Advisors SA

Hedge fund indices aim to quantify the returns of the hedge fund universe. In doing so, they offer a relative basis for comparing absolute hedge fund performance. However, investors should pay careful attention to index construction, which can easily misrepresent performance and may not fully reflect the complexity of the industry.

Summary

An investor welcomes the opportunity to compare their investments to a credible benchmark. For instance, a UK large cap equities portfolio would typically use the FTSE100 as a benchmark, since the index represents over 80 per cent of UK market capitalisation.

Hedge fund investors also value a trustworthy benchmark. However, the complex nature of hedge fund investments creates difficulties in the construction of a suitable measure. In addition, hedge fund database reporting introduces a number of biases that distort the true picture of hedge fund returns.

Nevertheless, this has not inhibited their widespread construction and use throughout the industry. In the absence of a more reliable alternative, it remains vital that investors understand the specific characteristics of these indices.

With hedge fund assets totalling over USD 2.5 trillion across more than 9,000 hedge fund vehicles at December 2013[1], an accurate measure of hedge fund performance is unquestionably justified.

[1] Source: Hedge Fund Research.

What was the performance of Global Macro managers in 2008 and 2009?

a) +5.6% and -8.8% or
b) -21.3% and +36.2%

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Hedge fund indices

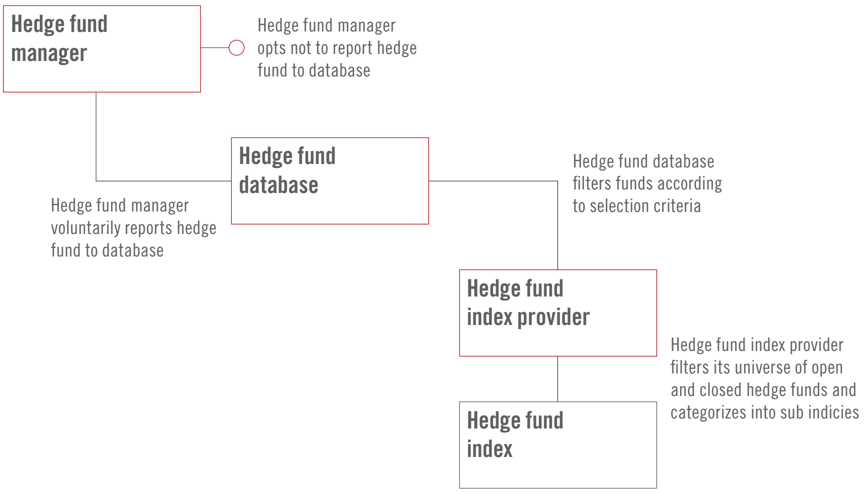
What are the origins of hedge fund indices?
Hedge fund indices have tracked the exponential growth of hedge fund assets, first appearing in the 1990s. Their use has grown in line with investor demand. Typically, hedge fund indices are employed in asset allocation studies, proving vital in assessing the impact of hedge fund investments on a broader asset mix. Hedge fund indices also offered the first opportunity to benchmark a manager's performance in an otherwise highly secretive industry. This was further extended to monitor a manager's style drift and investment discipline.

How is a hedge fund index constructed?
The construction flow of a hedge fund index begins with the hedge fund manager reporting the funds' description and performance to a hedge fund database. As hedge funds are private placements, the choice of database and which fund to report is completely voluntary and self-selected. A manager can therefore choose to report its best performing fund to only one index provider or not to report a poorly performing fund.

The hedge fund database provider aggregates the various funds that have reported and either gives hedge fund index providers access to its database or constructs indices itself. Typically, the database requires the hedge fund to describe its investments universe, terms and conditions and strategy/style. The index provider then assimilates the hedge fund database universe according to selection criteria which vary across index providers.

At this stage, the index provider constructs an index with a new, condensed hedge fund universe that can be further broken down into sub-indices covering the variety of hedge fund strategies and styles.

HOW A HEDGE FUND INDEX IS CONSTRUCTED



Source: Pictet Alternative Advisors SA

How does the concept of an 'index' apply to hedge funds?
By definition, hedge funds are absolute return investment vehicles. Therefore, the term 'hedge fund index', which introduces the concept of relative performance, is immediately counter-intuitive. Although a hedge fund manager operates within a definite strategy, each manager executes the strategy in his own manner. This is the source of any alpha, or skill of a manager, which varies across hedge funds and is a source of hedge fund performance.

The existing universe of hedge fund indices offers the investment community several options. Hedge fund indices can be strategy specific, equally weighted, asset weighted, 'investable', or 'non-investable'.

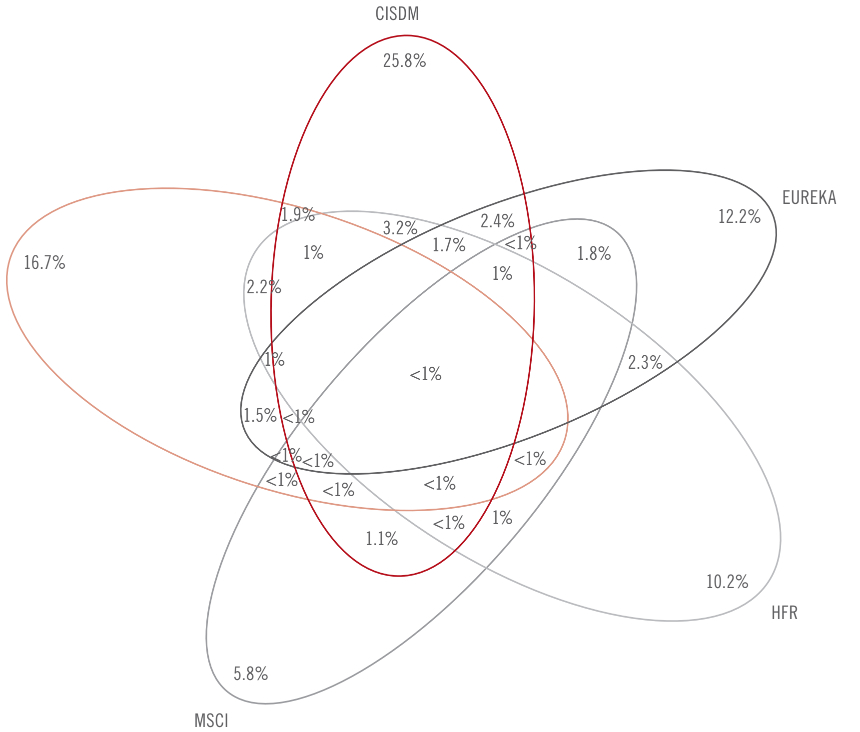
Hedge fund databases

[2]Source: *Performance Benchmarks and Survivorship Bias for Hedge Funds and Commodity Trading Advisors.* Park, J., S. Brown and W. Goetzmann, 1999. Reported in Hedge Fund News.

Do hedge fund databases reliably represent the hedge fund universe?
An index should represent a general proxy for an industry. Because of the characteristics associated with the hedge fund industry (i.e., private, unregulated offshore structures), hedge fund databases are subject to several **biases** that militate against an accurate representation of hedge fund strategies and consequently distort performance. Some biases inflate performance while others may skew index performance downwards. Hence they may only be able to provide a biased estimation of the 'true' hedge fund universe. Cumulative studies have estimated the impact of biases on performances to range between 0.7 per cent to 10.7 per cent per annum.[2]

What is 'self-selection bias'?
As the hedge fund universe consists mainly of private structures, there is no legal requirement to report performance to the general public. Consequently, reporting to a hedge fund database becomes completely voluntary. This leads to what is known as self-selection bias. Further, there is no obligation to report to all databases and the manager can therefore report to only two or three databases if they so desire. Voluntary reporting is driven by incentives.
A manager may opt not to report its performances due to either a bad track record—creating an upward bias—or because a fund with good performance is closed and wishes to retain its secrecy—leading to a downward bias. Managers understandably prefer to report good track records. A 1999 study suggested that self-selection bias causes a performance deviation of 1.9 per cent annually.[2]

INDUSTRY COVERAGE BY HEDGE FUND DATABASES



Source: *Inferring Reporting Biases in Hedge Fund Databases from Hedge Fund Equity Holdings, February 2010*
http://ssrn.com/abstract=1536886, V. Agarwal, et. al.
Figures indicate percentage of funds covered

The diagram above shows that less than 1 per cent of the hedge fund industry reports to all databases, highlighting the unrepresentative nature of hedge fund databases.

A study by Fung and Hsieh in 2000 estimates a performance deviation of 3.0 per cent annually as a result of **'instant history bias'**.

A study by Barry in 2003 estimates a performance deviation of 3.7 per cent annually as a result of **'survivorship bias'**.

Side-pockets: hedge funds with a proportion of potentially or actually illiquid assets may separate those assets into 'side-pockets' (subject to restrictive redemption conditions), which allows investors to raise cash by redemptions against the liquid portion of the fund's portfolio.

What is 'instant history bias'?

Also known as 'backfill' or 'retroactivity bias', instant history bias is defined as the historical restatement of the index following the addition of a fund. Depending on the provider, there are two instances where instant history bias occurs. First, a database that rebalances the historical returns of an index every time a new fund is added suffers from instant history bias. Second, and more commonly, instant history bias occurs at a launch of an index. For instance, if a new index launches in 2010, it can decide to backfill returns since 2000, therefore only selecting funds that have a suitable track record, instantly disregarding a segment of the universe that has a shorter track record. In both cases, inclusion of funds with good track records leads to overestimating the industry's performance, while those with a bad track record or dead funds are not reported.

What other database biases exist?

'Survivorship bias' or 'liquidation bias' occurs when constituents are removed from an index. In the case of hedge funds, survivorship bias commonly occurs when obsolete funds or 'blow-ups' cease to report to a database, which creates an upward bias for a given index. In addition, as private placements, hedge funds may also choose to stop reporting funds which have recently closed to new investors. This would result in a downward bias.

Database biases may also be aggravated by a manager's selective choice of the share class to report. For example, the share class reported may not be open to all qualified investors, or the performance reported may not include 'side-pockets'.

The methodologies of index providers

HEDGE FUND INDEX PROVIDERS AND THEIR CHARACTERISTICS

	Start date	Number of sub-indices	Equal or asset weighted	Investable or non-investable
Barclay Hedge Fund Indices	1980	27	equal	both
Dow Jones Credit Suisse Indices	1994	10	asset	both
EDHEC Alternative Indices	1997	13	equal	non-investable
Eurekahedge	2000	10	equal	non-investable
Hedge Fund Intelligence Indices - HFI	1998	61	equal	non-investable
HFR Hedge Fund Indices	1990	28	equal	both

Source: Pictet Alternative Advisors SA; *An introduction to Core Topic in Alternative Investments*, Mark J. Anson

How do methodologies differ between providers?
Typically, the first area of difference is the decision on selection criteria for fund inclusion. For instance, a provider may exclude any hedge fund with less than a 12-month track record, or only include hedge funds which have assets under management greater than USD200 million. Other criteria that vary between providers can include constraints on operations, underlying financial instruments or liquidity schedules. In some cases, index providers will even go as far as to perform a full due diligence of the reporting hedge funds. Finally, with the creation of subsequent sub-indices, some providers segment their universe into investable and non-investable hedge fund indices.

What is an 'investable' hedge fund index?
An investable hedge fund index is an index constructed only of hedge funds that are open to investment. Construction of investable indices is usually concentrated so that an index provider can easily replicate the index to meet client needs. Both characteristics contribute to an even smaller hedge fund universe, resulting in significant heterogeneity across providers. Investable hedge fund indices respond to increased demand from those whose resources limit their ability to run an end-to-end hedge fund investment program. Note, however, that contrary to its ostensible meaning, investable does not define an index in which investments can be made. Investments into hedge fund indices are achieved via hedge fund index products and not directly into the indices themselves. Hedge Fund Research (HFR) currently publishes over 70 investable hedge fund indices, under the acronym HFRX.

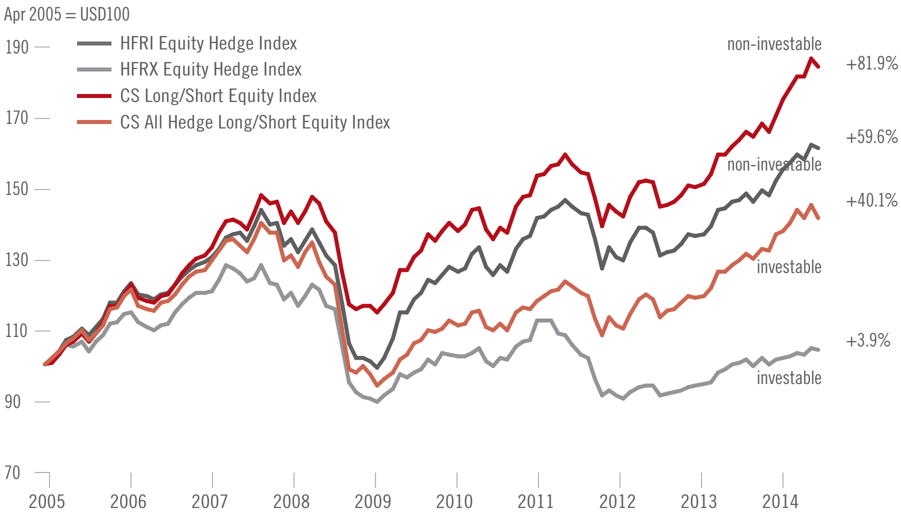
What is a 'non-investable' hedge fund index?
A non-investable hedge fund index is an index constructed using both open and closed hedge funds. Non-investable indices, while still representing a subset of the industry, are intended to give a fairer representation of the wider performance of hedge funds generally, by including hedge funds which both can and cannot be invested in. The indices can also be broken down into strategies and styles. For instance, the HFRI indices, published by Hedge Fund Research, include over 25 non-investable indices. Note that not all index providers construct non-investable indices.

INVESTABLE AND NON-INVESTABLE HEDGE FUND INDEX CHARACTERISTICS

Investable	Non-investable
• Constituents must be open to new investments	• Constituents can include open or closed hedge funds
• Suffer from database biases	• Suffer less from database biases than investable indices
• Must be easily replicable	• Larger universe to select from
• Increased biases due to tougher selection criteria (some undergo a full due diligence)	Better estimators of the hedge fund universe
• Construction more concentrated therefore have higher degree of heterogeneity	
Poor estimators of the hedge fund universe	

How do selection criteria affect hedge fund index performance across strategies and providers?
Returns of hedge fund indices can be highly dispersed because of the varying selection criteria used by different index providers. Moreover, the cumulative performances of an investable and a non-investable index, for the same strategy and from the same provider, are likely to differ significantly. The performance chart below shows that, since April 2005, the Credit Suisse All Hedge—L/S Equity (investable) and the Credit Suisse Benchmark Index—L/S Equity (non-investable) has a cumulative return of +68.5 per cent and +35.6 per cent respectively: a dispersion of over 30 per cent! The performance between two providers publishing indices on the same strategy also shows considerable dispersion. Over the same period, the HFRI Equity Hedge index (non-investable) and Credit Suisse Benchmark index—L/S Equity (non-investable) show a difference of over 17 per cent.

HEDGE FUND INDEX DISPERSION



Source: Pictet Alternative Advisors SA, data as at 31.03.2014

Fund of hedge fund indices

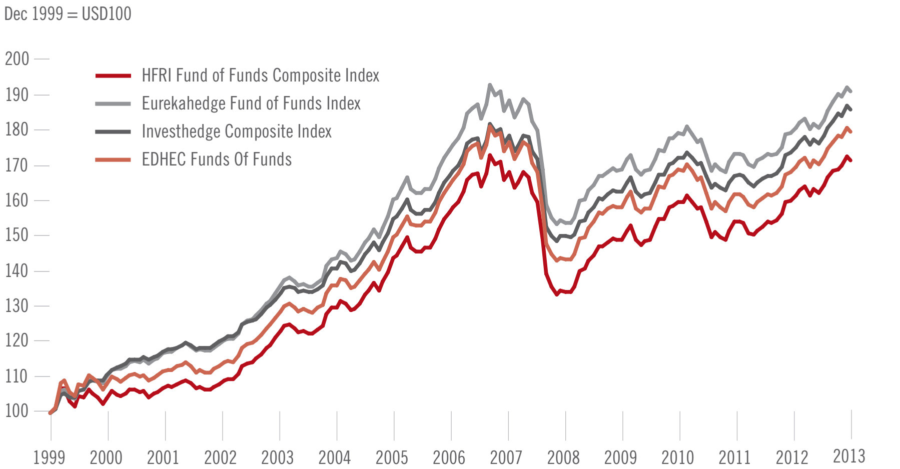
A study by Fung and Hseih in 2000 also estimated that instant history bias for a FoHF is approximately 50 per cent less than for hedge fund indices.

Do fund of hedge fund indices provide a better representation of the hedge fund universe?
Fund of hedge fund (FoHF) indices are constructed using FoHFs which have decided to report to databases. In comparison to hedge fund indices, FoHF indices include direct representation of hedge fund share classes that may not otherwise be reported. This reduces a database's self-selection bias. Further, when an underlying hedge fund liquidates, blows up or sets up side-pockets, the investing FoHF does not restate historical performance. All these factors contribute to a better representation of the hedge fund industry, while also limiting the database biases described above.

What are the limitations of fund of hedge fund indices?
While a better reflection of the hedge fund universe, FoHF indices still contain biases of their own. A FoHF typically undertakes thorough due diligence and would therefore invest in top performing hedge funds, avoid strategies that demonstrate high liquidity risks and exclude funds exposed to pitfalls. Furthermore, the hedge funds in which FoHFs invest in include tactical cash allocations, whereas hedge fund indices are typically 100 per cent fully invested. Unlike a direct hedge fund investment, investments in FoHFs incur a double layer of fees which dilutes performance. FoHF indices also suffer from self-selection bias.

How does fund of hedge fund index performance compare across providers?
FoHF indices also exhibit a wide dispersion between providers. The chart below compares four FoHF indices, each with a common track record since December 1999. Over the fourteen year period, there is a cumulative difference of 18 per cent between the highest and the lowest performance. Whether the performance of the pure hedge fund index—the InvestHedge Composite index—is any more reliable is difficult to assess, since it sits mid-way between the two extremes.

DISPERSION ACROSS FOHF INDEX PROVIDERS



Source: Pictet Alternative Advisors SA, data as at 31.03.2014

Investing in hedge fund indices

How can you invest in a hedge fund index?
Investors assume that investments into a hedge fund index can be made via investable hedge fund indices. However the term investable indicates merely that its constituents are open to investment, rather than an index in which investments can be made. Hedge fund index investing is achieved via products known as trackers.

What is a hedge fund index tracker?
A hedge fund index tracker is a collective investment vehicle designed to 'replicate' the performance of a hedge fund index by investing in the underlying hedge funds.

What is a hedge fund index replicator?
Replicators offer a synthetic hedge fund exposure by investing in market factors. They mainly seek to replicate non-investable indices and are constructed using three approaches: factor analysis; dynamic trading or payoff/distribution replication, or reverse engineering/bottom-up approach.

Why is hedge fund index investing popular?
Trackers and replicators create a source of hedge fund beta in a single product. Access to the hedge fund universe via index products offers a cost efficient alternative to FoHF investments because there is no double layer of fees. Furthermore, they are considered resource efficient, as they eliminate the need for a dedicated hedge fund selection team. Index products also usually offer daily liquidity with no lock-ups and typically have lower fraud risk, as they replicate hedge fund returns via traditional financial instruments such as futures or exchange traded funds (ETFs). However, one of the main drawbacks of hedge fund index products is a drag on performance.

What is hedge fund beta ('alternative beta')?
While **alpha** (manager skill) is the element of returns in a portfolio that cannot be explained by risk factors, **beta** is the portion of returns that *can* be explained by risk factors. In other words, beta is a measure of the systematic risk of a financial instrument relative to the market. Hedge fund indices may therefore be considered to have introduced a beta for the hedge fund universe, to the extent that managers following the same strategy employ a similar investment process. That part of returns due to investment style or process represent a common risk factor in the strategy, and are known as 'hedge fund beta' or 'alternative beta'—explaining an element of strategy returns.

How does a FoHF index performance compare with a hedge fund index tracker?
The chart below demonstrates the outperformance of a FoHF index versus a hedge fund index tracker. It can be argued that the opportunity cost of investing in a tracker versus a FoHF is a loss of performance, despite the operational efficiencies mentioned above.

FOHF INDEX VERSUS HEDGE FUND INDEX TRACKER PERFORMANCE

Source: Pictet Alternative Advisors SA, data as at 31.03.2014

Conclusion

Which index should be used?
In theory, to monitor the global performance of the hedge fund universe or when undertaking an optimal portfolio allocation study, FoHF indices, either composites or strategy indices, are the most reliable. However, in practice, many investors gravitate towards the Dow Jones Credit Suisse and HFR hedge fund indices. Use of these must come with an understanding of the biases discussed above.

To benchmark fund of hedge fund performance, multi-strategy FoHF indices offer the most relevant reference. In terms of benchmarking a thematic FoHF, then single strategy FoHF indices are most suitable.

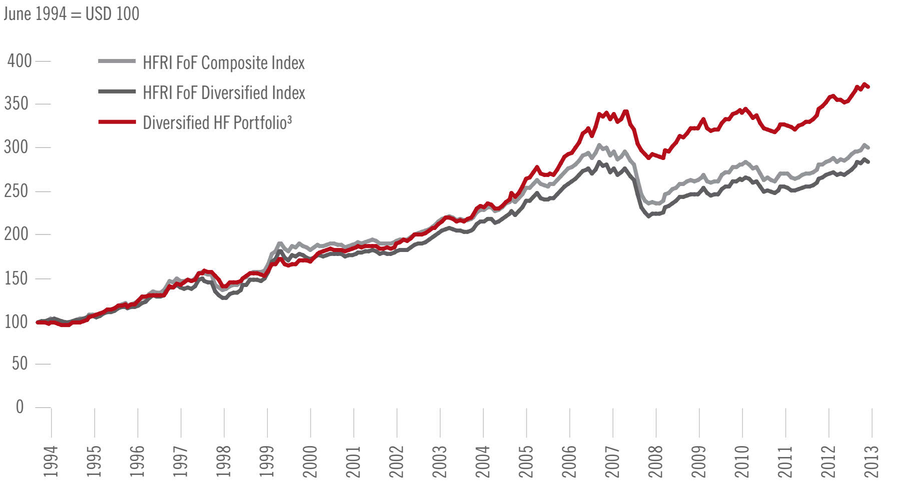
Comparing FoHF indices with a diversified hedge fund portfolio of concentrated investments, managed by *Pictet Alternative Advisors SA*, dispersion is reduced. Selecting the most appropriate index to compare a FoHF with depends on the profile of the underlying funds. In this case the HFRI FoF Diversified index is most closely aligned with the portfolio.

Understanding that major differences exist across hedge fund indices is fundamental to an investor who wishes to be able to benchmark the performance of an individual hedge fund or an FoHF against the industry as a whole.

When an investor wishes to estimate the performance of the hedge fund industry, understanding that this differential exists across hedge fund indices and FoHF indices is also fundamental.

[3] Track record of PAA concentrated multi-strategy hedge fund portfolio, Mosaic class J, since inception.

FUND OF HEDGE FUND INDEX DISPERSION



Source: Pictet Alternative Advisors SA, data as at 31.03.2014

Answer to the question on page 3: both a) and b) are correct.

HFRX Macro index posted +5.6% and -8.8% in 2008 and 2009 respectively. Credit Suisse Blue Chip Global Macro Hedge Fund index posted -21.3% and +36.2% in 2008 and 2009 respectively.