Benchmarking hedge fund performance remains an ongoing challenge for investors and managers in the industry. At Mesirow Advanced Strategies (MAS), creating custom benchmarks for each of our underlying managers is a critical component of our investment process. These custom benchmarks are created utilizing specific underlying instruments and exposures that best approximate a manager’s historical and expected exposure profile. Deviations from these expectations are potential sources of alpha and risk that assist us in formulating our opinions and analysis of the sources of manager return. It is a resource-intensive and time consuming process with broad applications. However, certain limitations also must be understood. Custom benchmarking is clearly a different approach than what is available to most investors who typically must rely on index providers’ published index returns.

While several approaches exist for constructing hedge fund benchmarks, the most commonly used indices can generally be defined as peer groups constructed by an index provider that utilizes predefined rules and some judgment to select certain funds, group them together and weight them into an index. This index construction process will, with certainty, involve subjectivity, introduce certain biases and generally lead to wide variation in returns across constructed benchmarks. In this paper, we outline some of the key considerations in selecting hedge fund performance indices or benchmarks.

Critical to the usefulness of the data and analysis is the selection of an appropriate index and a full understanding of its built-in biases and limitations. To gain this perspective, it is essential to understand how indices are constructed, the underlying methodologies utilized as well as the potential biases inherent in an index. Index transparency plays a vital role in understanding what we posit to be the three most important characteristics desired in a hedge fund index:

- Representativeness
- Investability
- Minimization of bias

Representativeness means that the index is an appropriate sample of what the investor is attempting to proxy. From the user perspective, the index should be as representative as possible of the type of investment strategy that the user is evaluating or analyzing. To understand this dimension requires index transparency, sound index construction methodology and an appropriate population and sample size.

Investability is the notion that the funds included in the index are open for investment and accessible to a prospective investor. As such, closed funds should be excluded for most, but not all, index applications.

Last, understanding potential index biases is also an extremely important aspect of index analysis and selection.
Similar to traditional asset class benchmarks, each of the existing and commonly utilized hedge fund indices is subject to some form of bias. Theoretical and empirical evidence suggests that these biases can have a dramatic impact on the annualized returns and risk characteristics of an index. For example, some biases may effectively overstate certain hedge fund index returns by 3% to 4% per annum or more.1 With no standard industry benchmark for evaluating hedge fund performance, methodological differences among index providers can complicate relevance and use.

AN IMPORTANT CAVEAT: DATA LIMITATIONS

There is a significant lack of comprehensive and publicly available data about hedge funds. As private investment vehicles, hedge funds have minimal obligations to disclose information to the broad public. In fact, publicizing information on hedge fund performance is not permitted in many instances due to the regulations regarding hedge fund marketing. Participation in any hedge fund database by a manager is voluntary. A manager may choose to report information to one database or many. A useful way of thinking about these limitations is to envision the following three categories or levels of the hedge fund universe. First, there exists a full universe of hedge funds comprising all of the hedge funds in existence: “the total universe.” Second is the list of all of the hedge funds that report to, or is captured by, a particular index provider, which we call “the database universe.” Lastly we have the hedge funds selected by the index provider from its database universe for inclusion in its index, “the index sample.”

Data limitations and biases exist at all three levels. At the first level, for example, one may need to ask: “Is this particular fund really a ‘hedge fund,’ or is it a private equity fund, real estate fund or an alternative structure of some other kind?” While this first level poses some interesting theoretical questions about what may be considered a hedge fund, we do not address it in this paper. In this paper, we will focus on key considerations at the second and third levels only. At the second level, we need to ask: “What funds actually supply data to the index database, and what is the nature of the data supplied?” And at the third level, “How does a particular index provider screen funds out of the database for inclusion in the index?” At each of these points, a representativeness problem or a bias may potentially be introduced.

REPRESENTATIVENESS AND INDEX CONSTRUCTION

When using an index to evaluate hedge fund strategies or specific hedge funds, it is important for the index to be an accurate representation of the strategy or manager in which it is evaluating. Because no industry standard exists for hedge fund strategy classifications, it is critical to look at the classification system used by the provider to ensure it aligns with investor expectations. As such, it is not uncommon for certain investment styles to be categorized differently across index providers.

For example, a structured credit strategy could be categorized or grouped into a Fixed Income Arbitrage or Distressed Credit or perhaps even a Relative Value strategy index. Similarly, a Hedged Equity strategy with high beta could be classified in the same category as one that has low beta or is even market neutral. A final example, and one that is a source of common misinterpretation, relates to Credit and Event strategy classifications. Distressed Credit strategies, typically focused on creating value through the bankruptcy or reorganization process, are sometimes categorized as “Credit,” or “Distressed Credit,” and sometimes as “Event Strategies.” Without the proper degree of transparency, an investor can potentially be misled as to the type and degree of risk inherent in a particular index. While many providers use returns-based “clustering” techniques to help fit like managers together into indices, this approach does have some limitations.

This representativeness issue becomes clearly apparent when comparing returns between various index providers. We have summarized above the annual returns of various

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Without the proper degree of transparency, an investor can potentially be misled as to the type and degree of risk inherent in a particular index.
“Event-Driven” hedge fund indices. Although the strategy classification terminology of these indices is virtually identical, investors should be aware of the high degree of disparity in performance across providers.

We will discuss some of the differences among these providers at a later point in this paper as well as in the appendix. But, with such large spreads among these indices each year, it is important to understand methodological differences.

In addition, investors should be aware of the level of manager due diligence performed during index construction. Most institutional investors perform significant non-investment and operational due diligence checks on hedge funds to manage potential risks such as fraud or misrepresentation. However, this is not necessarily true of underlying index providers. While most index providers will require some basic check, such as the existence of audited fund financial statements, it is generally not comprehensive and can potentially open the door to various manager-specific risks. Most notably, in 2008, Bernie Madoff’s split-strike conversion strategy found its way into many reputable market neutral indices. The Credit Suisse / Tremont Market Neutral index, which included large allocations to Madoff’s fund, was hit particularly hard, declining more than 40% in 2008, having had a large weighting to the Madoff funds.

As can be seen from these examples, transparency surrounding the construction process is critical to investors seeking to understand the representativeness and the underlying risks of a particular benchmark. However, beyond transparency and representativeness considerations, hedge fund indices are subject to a number of potential biases. While these examples may be related to representativeness, we have broken out below some of the common biases and have provided both an explanation of why they may exist and how they can be managed. We also provide an overview of some of the empirical work that has estimated the effects of these biases. These biases include survivorship bias, backfill bias, selection bias and valuation bias.

**SURVIVORSHIP BIAS**

Survivorship bias occurs when the sample of hedge funds in the database universe includes only funds that remain at the end of the reporting period. ‘Surviving’ funds are those that, at the end of the period, are both in operation and reporting information to the database. By including only ‘surviving’ funds in the database or index, funds that have either ceased operations or failed to provide returns as a result of liquidation during the period are excluded.

Funds routinely close because they are unable to deliver consistently positive returns, which subsequently has led to a consistently high attrition rate in indices. High attrition rates hint at index returns that are primarily representative of those funds successful enough to survive. For example,
when Brown, Goetzmann and Ibbotson (1999) analyzed survivorship bias, they reported an annual attrition rate of approximately 14%. Survivorship bias tends to create a positive skew in index returns because the index does not include performance of dying or defunct funds. Conversely, if a hedge fund decides to stop posting to a hedge fund database because they have closed to new capital, the lack of inclusion of these managers in the index at a period's end can actually lead to a downward survivorship bias. Most estimates suggest that the former situation is much more prevalent, leading to overstatement of index performance relative to the true universe. Note one way to partially control for these biases and other constraints is to compare the index to its investable index counterpart, e.g. HFRI to HFRX.

Various researchers have done work to estimate the effect of survivorship bias on hedge fund indices. The data gives only slightly different results dependent on the analytical method employed by the researcher, the assumptions made, as well as the database universe chosen. However, directionally, the results tend to be quite consistent. In the Brown, Goetzmann and Ibbotson study referred to above, the researchers estimated that survivorship bias accounted for approximately 3.00% of unrealizable returns per year. This was consistent with research done by Fung and Hsieh (2000) whose estimate of survivorship bias was also 3.00%. Another recent study by Ibbotson, Chen and Zhu (2011) supports these findings with a survivorship bias range of 3.16% to 5.13%, dependent on whether backfilled results are included in the data analyzed.

BACKFILL BIAS (OR INSTANT HISTORY BIAS)

Backfill bias occurs when a manager adds a new fund to a database for the first time and backfills the historical returns. Many hedge fund indices require a 12-month track record for consideration in an index. The fund enters the database with an “instant history,” most often a satisfactory performance history, which will aid in marketing the fund. The first source of bias relates to a manager’s ability to cherry-pick among its incubating funds and select only those that perform well. Second, because the fund manager can decide how many months of the track record to reveal, the incubation period at which returns are posted can be reasonably lengthy. Each hedge fund database handles the backfilled months differently with respect to inclusion in their particular index. In any case, where a manager has discretion over how much history to include, or when the full history of all universe constituents is not reported (not only those that survive an incubation period), the historic returns of the index build in some type of backfill bias, which typically skews the index returns positively.

Again, researchers have worked to estimate the effects of backfill bias on hedge fund indices with a wide range of results. Academic studies that are most compelling show a range of backfill bias effect from a low of approximately 1.40% to a high of approximately 5.00%. In the most recent study by Ibbotson, Phen and Zhu (2011), the researchers estimated backfill bias effects to be 2.97% for an equal-weighted portfolio, and only 0.27% for a value-weighted portfolio. Because larger funds dominate the weighting in value-weighted portfolios, this data suggests that large funds are less likely than small funds to have backfill data, and that as a result, value-weighted funds will be much less susceptible to this bias. This is consistent with MAS’ current views.

SELECTION BIAS (OR MEMBERSHIP BIAS)

Selection bias may occur first at the database universe level and second at the index sample level. First, as hedge fund returns are self-reported, many funds with poor performance can choose not to report. Because the reporting of returns can influence asset growth, managers may be inclined to report returns when performance is positive. Even with strong performance, managers may cease reporting to limit the size of the fund. Therefore, the absence of such funds (both negative and positive performers) from index returns not only reduces the reported range of
returns, but also obscures the data with respect to analyzing the probability of extreme negative outcomes. Second, at the index sample level, many data providers introduce biases as a result of their index construction methodology. For example, they may exclude funds that are smaller than a certain size. This is in fact a common practice with index providers typically including funds that meet an “assets under management threshold” of USD 50 million to USD 100 million. Another common selection bias results when an index provider bases index inclusion on liquidity of the underlying fund. For example, many indices (especially investable indices) will only include funds with monthly or better liquidity. This may or may not be representative of the liquidity tolerance of an investor. In MAS’ current view, this will tend to bias downward the index returns, as we believe that illiquidity risk, when managed appropriately, can be a source of long-term return premium.

As discussed above, providers may equal-weight or value-weight index constituents (similar to capitalization weighting of a traditional index). The weighting scheme chosen can significantly add to or potentially mitigate the effects of other biases as demonstrated in the discussion of backfill bias above. Another form of selection bias can be introduced by the provider’s methodology in choosing whether to eliminate funds from an index once they close to new investors. Such a practice may or may not be most appropriate, depending on what the purpose of the index is for the index data user.

VALUATION BIASES

Valuation biases may be inherent especially in certain strategy-specific indices prone to illiquid or over-the-counter securities. Because these securities are not frequently traded, their prices tend to lag until the following period when presumably the security trades are valued accordingly. This infrequency of pricing is referred to as “non-synchronous” pricing. The end result, in the short-term, is a more attractive risk-adjusted return with lower correlation to traditional markets. For this reason, many hedge fund indices elect to exclude side pockets and other illiquid investments from their selection criteria which may underestimate the true risk exposure to an investor.

According to a study by Asness, Krail, and Liew (2001), using longer-horizon returns is an effective method to alleviate the effects of non-synchronous price reactions on estimates of volatility and correlation. Although longer-horizon returns are still impacted by stale pricing, research shows the aggregate hedge fund index correlation with the S&P 500 rises to 0.64 from 0.52 when quarterly data is used rather than monthly.5 Private equity and venture capital fund returns provide another example of how valuation bias can impact volatility estimates. A study by Terhaar, Singer and Staub (2003) suggests that if venture capital were valued in real-time, such as stocks in the S&P 500, the measured volatility estimates for the venture capital asset class could be as much as double that of the S&P 500, much higher than commonly believed.6 These types of valuation biases in our view will not tend to affect long-term return estimates, but will tend to lower volatility and correlation estimates meaningfully. In the case of hedge funds, managers with distressed credit and private positions will be most susceptible to this bias. In addition, because some funds put these types of investments in “side pockets,” whether the index provider allows inclusion of side pockets in their database can have a meaningful impact.

COMPARISON OF HEDGE FUND INDICES

It is important to be aware of the potential biases discussed above in evaluating the use of any index, and especially hedge fund indices. Some of these biases may have ambiguous effects on index returns, but many in fact serve to overstate the returns realizable to an investor in the strategy class. In the table on page 6 and appendix pages that follow, we summarize some of the key considerations of the seven most commonly utilized hedge fund index providers and our assessment of some of the pros and cons of each. We recognize that some of these characteristics are

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Research shows the aggregate hedge fund index correlation with the S&P 500 rises to 0.64 from 0.52 when quarterly data is used rather than monthly.
dependent on the specific index, so we have generalized to
the most common characteristics of the flagship index for
each index provider. Certain providers are more or less
transparent than others, and we generally view greater
transparency as a key positive in helping investors under-
stand and choose an appropriate index. In addition, certain
indices tend to have structural differences in equity market
beta characteristics, depending on the index provider and
the specific index chosen. While we do not provide histori-
cal beta calculations here because we are generalizing to
groups of indices, this is a key characteristic to analyze as
a component of index evaluation.

CONCLUSIONS

Creating a highly customized benchmark for each spe-
cific manager investment is, in our opinion, usually the best
approach for analyzing the sources of relative risk and
return in a portfolio, and in turn a valuable tool for differenti-
tiating skill from luck. However, because most institutional
investors do not have the time, resources or appropriate
transparency to create effective custom benchmarks, regu-
larly published indices can provide meaningful value,
despite their inherent limitations.

Generally speaking, the representativeness of an index
must be judged in the context of the specific index and the
investor’s own process. However, all else equal, we believe
an investable asset-weighted index will best mitigate the
risk of backfill and survivorship bias while also providing the
most accurate approximation of available performance to
investors. It is important to note that performance biases
are also introduced in this approach as larger fund perfor-
mances are more heavily weighted. Across the industry,
empirical evidence concludes that most indices are subject
to approximately a 3-4% upward bias in performance.

Despite this fact, when used correctly, benchmarks can
effectively aid investors in making informed decisions
throughout the investment process.

<table>
<thead>
<tr>
<th>Index Provider</th>
<th>Funds in Universe</th>
<th>Funds in Index</th>
<th>Weight</th>
<th>Open/ Closed Funds</th>
<th>Investable</th>
<th>Min. Fund Size</th>
<th>Min. Track Record</th>
<th>Liquidity Requirements</th>
<th>Rebalancing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFRI</td>
<td>~7000+</td>
<td>~2000</td>
<td>Equal</td>
<td>Both</td>
<td>No</td>
<td>$50M</td>
<td>1-yr</td>
<td>N/A</td>
<td>Monthly</td>
</tr>
<tr>
<td>HFRX</td>
<td>~7000+</td>
<td>~250</td>
<td>Complex Clustering Formula</td>
<td>Open</td>
<td>Yes</td>
<td>$50M</td>
<td>2-yr</td>
<td>N/A</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Dow Jones Credit Suisse Hedge Fund Benchmarks</td>
<td>5000 tracked, ~900 meet index universe req.s</td>
<td>462</td>
<td>Asset weighted with caps</td>
<td>Both</td>
<td>No</td>
<td>$50M</td>
<td>1-yr audited</td>
<td>N/A</td>
<td>Monthly</td>
</tr>
<tr>
<td>Dow Jones Credit Suisse AllHedge</td>
<td>5000 tracked, ~900 meet index universe req.s</td>
<td></td>
<td>Asset weighted with caps and rules</td>
<td>Open</td>
<td>Yes</td>
<td>$100M</td>
<td>1-yr audited</td>
<td>Monthly or quarterly depending on strategy</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Dow Jones Credit Suisse Blue Chip</td>
<td>5000 tracked, ~900 meet index universe req.s</td>
<td>60</td>
<td>Asset weighted with rules</td>
<td>Open</td>
<td>Yes</td>
<td>Largest 6 from each sub category</td>
<td>1-yr audited</td>
<td>Monthly or quarterly depending on strategy</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Eurekahedge</td>
<td>~9000</td>
<td>N/A</td>
<td>Equal</td>
<td>Both</td>
<td>No</td>
<td>None</td>
<td>None</td>
<td>N/A</td>
<td>Daily</td>
</tr>
<tr>
<td>Hennessee</td>
<td>~3500</td>
<td>1000+</td>
<td>Equal</td>
<td>Both</td>
<td>No</td>
<td>$10M</td>
<td>1-yr</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Indices are considered investable generally when only funds open for investment are included
When comparing focused strategies, a narrow index with risk and return objectives similar to that of the investor or manager, such as one of the Dow Jones Credit Suisse AllHedge sub-indices, is recommended. This should help to eliminate unrelated factor returns that could potentially skew a manager’s assessment of beta exposure and subsequent alpha estimates. However, bear in mind that index providers may classify hedge fund strategies in different manners. As such, it is imperative to gain as much transparency as possible regarding the nature and classification of the constituents chosen for the index so that an accurate comparison can be made.

When benchmarking against a diversified portfolio, we conclude that a single fund of hedge funds (FOHF) or even a select group of FOHF, such as the HFRI Fund of Funds Composite Index, may be best for addressing the above biases. Mesirow Advanced Strategies works with a consultant to construct a custom index of FOHF peers in order to understand our competitive position and differentiation. Fung and Hsieh (2000) also concluded that returns from FOHF are less susceptible to measurement biases because they generally represent real records of investor outcomes. They note a number of favorable characteristics of FOHF including mitigation of survivor bias and backfill bias, as well as fact that the majority of FOHF report audited performance to their investors.

Finally, in recent years asset managers and commercial banks such as Deutsche Bank, Credit Suisse and Goldman Sachs have begun to offer tradable hedge fund replicators that are meant to imitate “hedge fund beta.” These indices seek to replicate the beta (and perhaps even some of the alpha) component of hedge funds through various derivative contracts that provide exposure to the return factors inherent in a hedge fund’s investment strategy. MAS believes hedge fund replicators may have promising characteristics for benchmarking purposes assuming the goal of a benchmark is to first assess a manager’s fit to hedge fund beta risk factors, and secondly, assess a FOHF (or other investment professional’s) skill in manager selection (alpha). Again, biases will exist that should be understood and mitigated.

When evaluating hedge fund indices there is no absolute answer as to which is best. Each index is subject to an array of selection criteria which inevitably creates biases that must be addressed. It is our belief that investors and managers must take into account an index’s representativeness, investability and biases in conjunction with their individual investment objectives. Once these factors are taken into consideration, an educated decision can be made as to which benchmark is most appropriate.
Appendix – General Index Descriptions

HFRI- Hedge Fund Research Indices

CONSTRUCTION: This index began reporting in January of 1990 and currently there are 2,000 funds in the HFR database. There are four main HFRI strategy level indices (event driven, equity hedge, relative value and macro). In order to be in the database these hedge funds must:

- report monthly net returns in USD
- have at least $50M under management or have been actively trading for at least 12 months

METHODOLOGY: Equally-weighted index calculated three times per month (fifth business day, business day closest to 15th of month, and last business day of month) with performance available monthly to the public, sourced from hedge funds which are listed in HFR's database. If a fund liquidates, that fund's performance will be included in the relevant HFRI index as of that fund's last reported performance update. It also can be removed from the index if the manager requests to do so, at any time. Both domestic and offshore funds are included in the HFRI indices. In cases where a manager lists mirrored performance funds, only the fund with the larger asset size is included in the HFRI index. All HFRI indices are equally-weighted with respect to each fund. There are no side pockets included in the database. Also, a fund is only eligible for inclusion in an HFRI index the month after its addition to HFR Database. Funds are added and dropped on a regular basis, but this process does not change historical returns. Funds may be dropped if they no longer report returns or if they do not meet HFR's requirements for listing.

PRO

- Favorable representativeness - largest number of reporting funds (+2,000) with very transparent methodology.
- Equally-weighted among funds and sectors providing a very general overview of industry performance.
- Includes both domestic and offshore funds.

CON

- Susceptible to survivorship bias as dying funds can discontinue posting returns as they please and will remain in the database.
- As a non-investable index, does not represent the performance that may be accessible through investment.
- Susceptible to selection bias not including funds with less than $50M in AUM.
- Research suggests that the effects of backfill bias are greater for equal-weighted indices than value-weighted indices.
HFRX- Hedge Fund Research Investable Indices®

CONSTRUCTION: The HFR Hedge Fund Database of open hedge funds is screened within each strategy in order to determine a set of funds that meet all of the following criteria:

- Fund reports monthly
- Performance reported net of all fees
- Fund returns are USD denominated
- Fund is active and accepting new investments
- Fund has a minimum 24 months track record
- Fund’s manager has at least $50M in assets under management

The pool of hedge funds that satisfy all of the above criteria frequently contains multiple funds in the same strategy managed by the same manager. This is especially true for large and well known managers. Only one representative fund in each strategy is selected for each fund manager. If the representative fund cannot be readily determined, then:

- The fund with the longest track record will be selected as representative.
- The fund with the most assets under management will be selected if there are multiple funds with the same length of track record.

METHODOLOGY: Same removal and addition guidelines as HFRI. The actual methodology for the formulating of the weighting of the benchmarks and calculations is extremely complex.

PRO

- Screens approximately 7,000 funds to make a universe of 250 constituents.
- Investable to investors and includes certain qualitative characteristics such as whether the fund is open to transparent fund investment and the satisfaction of the index manager’s due diligence requirements.
- As an investable index, more accurately represents the performance accessible to potential investors.

CON

- Lack of clear transparency with respect to extremely complex calculation of weighting in index.
- Susceptible to selection bias, not including closed funds and funds with less than $50M in AUM and mandatory two-year track record (compared to one year in most other cases).
- Susceptible to survivorship bias, as funds can discontinue posting returns as they please.
Dow Jones Credit Suisse Indices (formerly the Credit Suisse/Tremont Hedge Fund Indices)8

1. Dow Jones Credit Suisse Broad Indices
2. Dow Jones Credit Suisse AllHedge Indices
3. Dow Jones Credit Suisse Blue Chip Indices

OBJECTIVES

1. The Dow Jones Credit Suisse Hedge Fund Index was the industry’s first – and remains the leading – asset-weighted hedge fund index. The flagship index of the Dow Jones Credit Suisse Hedge Fund Index family is the Dow Jones Credit Suisse Hedge Fund Index. The family also includes individual strategy indices, which are collectively known as the Dow Jones Credit Suisse Hedge Fund Strategy Indices.

2. The Dow Jones Credit Suisse AllHedge Indices are designed to provide transparent, representative and objective benchmarks of the ten style-based investment strategies of the hedge fund universe. The unique features of the indices enable them to serve as the foundation for a broad suite of investment products. The composite index of the family is the Dow Jones Credit Suisse AllHedge Index.

3. The Dow Jones Credit Suisse Blue Chip Hedge Fund Index is designed to provide a transparent, representative and rules-based benchmark of the investable index universe. The unique features of the index enable it to serve as the foundation for a broad suite of investment products and enable investors to measure a liquid and diversified subset of the hedge fund universe.

CONSTRUCTION: The Dow Jones Credit Suisse Indices employ:

- Rules-based selection criteria
- Rules-based construction methodology
- Representation
  1. **Broad Indices** 85% of eligible funds by AUM in each representative strategy subject to a minimum of ten funds and a maximum of 25 funds per index.
  2. **AllHedge Indices** 70% of eligible funds by AUM in each representative strategy subject to a minimum of ten funds and a maximum of 25 funds per index.
  3. **Blue Chip** 60 member funds represent the largest six eligible funds by AUM in each of the ten sectors comprising the original index.

FUND ELIGIBILITY

- **AUM Requirements**
  1. **Broad Indices** at least $50M
  2. **AllHedge Indices** at least $100M
  3. **Blue Chip** at least $100M

- **Investability**
  1. **Broad Indices** Open and closed funds. Non-investable.
  2. **AllHedge Indices** Open funds only. Investable.
  3. **Blue Chip** Open funds only. Investable.

- Non-US domiciled fund
- No lock up
- Monthly contributions
- Monthly redemptions with 30 day notice (except for convertible arbitrage, event and multi-strategy)
- Meets reporting requirements
- Permits restricted investors to invest
- 30 day redemption notice

METHODOLOGY: The weight of each member fund is calculated with the rules outlined in initial index construction. Fund caps may be utilized to enhance diversification and limit concentration risk. Constituents are rebalanced semi-annually in April and October. Additions or deletions from the benchmark are incorporated at the start of each month. The funds are selected through a database sorting of information that is self-reported by the fund managers. Each manager must have an opened managed account so that the daily returns can be reported.

Funds can be dropped if they do not comply with reporting requirements or cease operation. Funds must have a current audited financial statements and a minimum one-year track record - unless a fund has $500M or more with less than a one year track record. All figures are provided in USD and released monthly on the 15th calendar day. Liquidating funds are not removed until fully liquidated.
Each fund must have a minimum track record of one year with at least $50-100M in AUM, depending on the index. Each selected fund must also fit the style purity of each index through cluster and quantitative analyses and correlation analysis with other hedge fund indices. Additionally, each fund must undergo an on-site due diligence review.

**PRO**
- **All**
  - Style-purity analysis allows for a more accurate and transparent comparison across strategies.
  - Composition of benchmarks is transparent as managers and selection criteria are clearly disclosed.

- **Broad Indices**
  - Favorable representativeness as the broadest of the Dow Jones Credit Suisse indices, including both closed and open funds.

- **AllHedge Indices**
  - Evidence shows that asset indices reduce the effects of instant history bias, as larger funds are less likely to include backfill data.
  - As an investable index, more accurately represents the performance accessible to potential investors.
  - Survivorship bias is mitigated through the removal of dead or defunct funds.

- **Blue Chip Indices**
  - Evidence shows that asset indices reduce the effects of instant history bias as larger funds are less likely to have backfill data.
  - As an investable index, more accurately represents the performance accessible to potential investors.
  - Survivorship bias is mitigated through the removal of dead or defunct funds.

**CON**
- **All**
  - Susceptible to selection bias because mandatory minimum of $50-100M in AUM, and statistical requirements cause self-selection and identification with a peer group.
  - Not necessarily objective as Dow Jones Credit Suisse can add or delete funds at its discretion at the start of each month.
  - Limited amount of funds offer monthly liquidity thereby excluding a significant portion of the hedge fund universe.

- **Broad Indices**
  - As a non-investable index, does not represent the performance that may be accessible through investment.

- **AllHedge Indices**
  - Asset-weighted construction creates susceptibility to inflated performance figures and lower levels of volatility.

- **Blue Chip Indices**
  - Asset-weighted construction creates susceptibility to inflated performance figures and lower levels of volatility.
Eurekahedge Hedge Fund Indices

CONSTRUCTION: More than 200 distinct indices focused on providing investors a means to evaluate whether a hedge fund manager is outperforming a “bucket” of its peers with respect to region, fund size and country strategy. Eurekahedge's niche is in providing investors with a gauge of general returns more focused on geography and strategic positions. While Eurekahedge has a multi-strategy flagship hedge index, the focused indices allow for managers to use a relative benchmark in presentations and monthly reports. Inclusion requires that 90% of the regional mandate of the fund must be included in the specific region or country. Further, if there is an offshore and an onshore fund it is only represented once in each index.

METHODOLOGY: The index values are averages of all the managers included in the index. If new funds are identified and included in the indices, then historical performance history of these funds will also be included in the index as well. If a fund becomes defunct, its track record will remain permanently in the index. Because the goal for these indices is to be used as benchmark funds, not for investable purposes, included are funds which are closed to investment. Lastly, as monthly updates from managers are received, they are immediately fed into the database and provide index performance changes on a daily basis.

PRO
- Reduced selection and survivorship bias as dead funds permanently remain in the index, in addition to no minimum AUM and track record requirements.
- Transparent methodology between placing funds in focused “buckets.”
- Defined goal of benchmarking macro view of industry met by equally weighting.

CON
- Susceptible to backfill bias as historic index returns are changing with addition of fund to index.
- Weights returns of a $10B and $10M fund equally for index performance.
- As a non-investable index, does not represent the performance that may be accessible through investment.
- Research suggests that the effects of backfill bias are greater for equal-weighted indices than value-weighted indices.
CONSTRUCTION & METHODOLOGY: Over 3,500 hedge funds report performance to Hennessee Group and are then placed into a different style index based on the manager's communicated investment style. The index is reported based on an average, or un-weighted, return of each fund included. All returns are net of fees. Each firm must have a 12 month track record to report unless it has over $100M in AUM, in which case there could be an exception made by the 'Index Committee' which constructs the index. Each fund must have at least $10M under management and report performance on a monthly basis. Additionally each fund must disclose to Hennessee its investment style to be accurately included in a sub-index. Hennessee began recording data on hedge funds in 1987 so it is one of the better representations, historically, of the hedge fund universe.

PRO
- Limits selection bias by including open and closed funds.
- Less selection bias because minimum AUM is $10M (not the typical $50M).
- The fund helps describe investment style to accurately include fund in sub-index.
- Opening in 1987 limits the instant history bias when gauging historic fund return.

CON
- Very little transparency with how defunct and dead funds are handled in construction and methodology of indices.
- Individual returns on the fund level of what comprises the index are not available.
- The potential that a $10M and $1B fund have the same weight in the index
- As a non-investable index, does not represent the performance that may be accessible through investment.
- Research suggests that the effects of backfill bias are greater for equal-weighted indices than value-weighted indices.

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