Selecting A Hedge Fund Replication Approach

Some factors to consider

By Salvatore Bruno and Robert Whitelaw

Hedge funds have historically been important asset allocation components of well-diversified portfolios for sophisticated investors. The endowment model pioneered by David Swensen[1] to manage the Yale Endowment Fund argues for alternative investments in general and hedge funds in particular to play more significant roles in portfolios. The limited-constraint nature of hedge funds is intuitively appealing to investors, as studies have shown that constraints limit the alpha potential of portfolios. Perhaps the most widespread example of the limitation on regulated investment products is the limitation on short positions. Traditional long-only managers can only invest in long positions up to 100 percent of the value of their portfolios, by definition. By relaxing the long-only constraint, researchers have shown an increase in the potential to add alpha and minimize risks.[2] This research has led to the widespread adoption of long/short portfolios (also called active-extension strategies or 130/30 portfolios representing long weights of 130 percent and short weights of -30 percent).

Despite the benefits of hedge funds, a number of characteristics have limited their desirability and accessibility from the perspective of the average investor. As virtually all hedge funds are organized as limited partnerships (LPs), there are limits on the number and types of investors a fund can have. These limits relate to minimum investor asset levels and minimum income requirements, among other things. These restrictions effectively eliminate access to hedge funds for most individual investors. For those investors that do meet the accredited investor minimums, obstacles may still remain. Among these are:

- Manager selection – Performing the necessary due diligence to find a good hedge fund can be very time-consuming and requires a certain level of investment acumen. Further, once an investor identifies a good fund, it is possible that the manager may not be accepting new clients or that the hedge fund selected may not perform as desired.
- Liquidity – Hedge fund industry standards are to provide liquidity on a monthly or quarterly basis with advance notice of up to 45 days or more. Some investors want additional liquidity.
- Transparency – Reporting requirements in the hedge fund industry are far more relaxed than for registered investment products. In an attempt to protect their intellectual capital, many hedge funds do not provide regular updates on positions held in their portfolios.
- Fees – Hedge funds typically charge management fees of 1-2 percent of assets plus performance fees of 10-20 percent of the profits of the portfolio. To avoid some of the manager selection issues noted above, some investors choose to invest in hedge funds via a fund-of-funds structure. The fund-of-funds will add a fee for their service that may be an additional 1 percent of assets plus a percentage of the profits.

Academic researchers began to study the positive performance characteristics of hedge funds in the 1990s and 2000s. Several influential papers established that up to 77 percent of hedge fund returns can be attributed to beta, i.e., exposure to broad asset classes or factors, with the remaining 23 percent being alpha, i.e., performance specific to the strategies of the fund. Further, studies have shown that by using variants of Sharpe's returns-based style analysis, it is possible to estimate the beta exposures of hedge funds. Subsequently, researchers showed that by using liquid, exchange-traded instruments, it is possible to create a return series that approximates the beta returns of hedge funds. Investment professionals began to use the building academic body of research to develop indexes designed to mimic the performance of hedge fund beta. Starting in the mid-2000s, Merrill Lynch introduced the Merrill Lynch Factor Index, followed by Goldman Sachs, who developed the Goldman Sachs Absolute Return Tracker (GSART) Index. Both of these indexes are designed to track broad hedge fund indexes. IndexIQ followed these launches with the first suite of hedge fund replication indexes designed to replicate individual hedge fund strategies rather than broad indexes. More recently, Credit Suisse has also introduced indexes tracking individual hedge fund strategies.

All of the hedge fund replication strategies referenced above use a factor-based approach; however, there are significant differences in the development and implementation of the factor models that create meaningful variations in the final product. The next section of this article discusses the academic research in more depth. While not meant to be an exhaustive review of academic work in the area, we introduce what may be some of the most influential published articles. Next, this article identifies some of the most important decisions that need to be made when developing a factor-based hedge fund replication model, using the IndexIQ models and the academic research that underlies them as examples. Finally, the article provides a summary of the factor-based investment products currently available in the United States.

It is important to note that hedge fund replication also exists in a very meaningful way in Europe, and there are substantial assets invested in both listed and OTC products in Europe. A review of these products is beyond the scope of this article, but it is important to recognize their existence and the contributions to the body of research from academics and investors in Europe.

Hedge Fund Returns Attract Academic Interest

From 1995 through 2007, hedge funds in aggregate had 13 consecutive years of positive returns, as reported by Dow Jones Credit Suisse (formerly Credit Suisse/Tremont),[3] Notably, this period covers the rise and fall of the equity markets coinciding with the creation (1995-1999) and subsequent bursting of the technology bubble (2000-2003). During the five-year period from 1995-1999, hedge funds returned, on average, 18.16 percent, while the U.S. equity market, as measured by the S&P 500 Index, gained 28.56 percent. Hedge funds captured, on average, over 63 percent of the upside returns of the market. During the period when the technology bubble deflated from 2000-2003, hedge funds returned 4.81 percent per year, while the equity market lost 14.55 percent per year. Clearly, this type of upside partici-

pation with downside protection can be very beneficial to a portfolio, and investors took note. As assets began to flow into hedge funds in large sums, the number of hedge funds grew in response. It is estimated by Hedge Fund Research[4] that the number of hedge funds grew from just over 600 in 1990 to almost 4,000 by the year 2000. By 2007, the estimated number of hedge funds exceeded 10,000.

Not surprisingly, the compelling investment results and explosive growth in hedge funds began to attract academic interest. Initially, academics were not concerned with replicating hedge fund results. Rather, their interest centered on analyzing and understanding the key drivers of hedge fund returns. Two of the early researchers to look into the sources of hedge fund returns were William Fung and David Hsieh.[5] They published articles in 1997 and in 2001 that used William Sharpe's return-based style analysis (originally published in 1992)[6] to analyze hedge fund returns, stating "the article finds five dominant investment styles in hedge funds, which when added to Sharpe's [1992] asset class factor model can provide an integrated framework for style analysis of buy-and-hold and dynamic trading strategies." This research established time series analysis of hedge fund returns as a viable method for estimating hedge fund exposures.

Perhaps the most groundbreaking research came in 2006, when Jasmina Hasanhodzic and Andrew Lo published a paper titled "Can Hedge Fund Returns Be Replicated?: The Linear Case."[7] Hasanhodzic and Lo analyzed the returns of over 1,600 *individual* hedge funds from the TASS database and wrote, "For certain hedge-fund style categories, we find that a significant fraction of both [expected returns and volatility] can be captured by common factors corresponding to liquid exchange-based instruments." This paper clearly moved the discussion forward, as it shifted the emphasis from analyzing hedge fund returns as part of performance analysis into the realm of actively trying to create synthetic returns using liquid, exchange-traded instruments that shared similar risk and return attributes to actual hedge funds.

In 2007, Thierry Roncalli and Guillaume Weisang[8] presented a framework for hedge fund replication using Bayesian filters. An important outgrowth of their research is that by creating a reliable model, it became possible to estimate the proportion of returns due to alpha and to beta. When analyzing the returns of the Hedge Fund Research Index (HFRI), they wrote "… a large part of the HF [hedge fund] returns are not explained by the traditional alpha but by the alternative beta. For the entire period [1994-2008], the alternative alpha explains about 23% of the HF returns whereas the alternative beta explains about 77%." This result supported the notion of a core/satellite approach, using hedge fund replication as a core component that could "… still be supplemented by other illiquid instruments to capture and reproduce more efficiently the risk profile of the hedge fund industry."

In 2009, Noel Amenc, Lionel Martellini and others at EDHEC[9] published a paper titled "Passive Hedge Fund Replication—Beyond the Linear Case." The paper made several important contributions to the growing field of hedge fund replication by extending the paper of Hasanhodzic and Lo. Amenc et al. examined different approaches to hedge

Figure 1

Index Performance Comparison

December 31, 2001 - December 31, 2011	HFRI-FWI	DJCS HFI	S&P 500	BarCap Agg Bond
Annualized Return	5.92%	6.44%	2.92%	5.78%
Annualized Std. Dev.	6.52%	5.84%	15.93%	3.70%
Return/Risk	0.91	1.10	0.18	1.56
Correlation to S&P 500	80.11%	68.42%	100.00%	-5.55%
Correlation to BarCap Agg Bond	-3.04%	3.30%	-5.55%	100.00%

Sources: Dow Jones Credit Suisse, Hedge Fund Research, Bloomberg, IndexIQ research

fund replication. They wrote, "We find that going beyond the linear case does not necessarily enhance the replication power. On the other hand, we find that selecting the factors on the basis of an economic analysis allows for a substantial improvement in the out-of-sample replication quality, whatever the underlying form of the factor model." This was an important piece of research because it documented the importance of factor selection in the investment process. Amenc et al. also wrote, "[W]e confirm the findings in Hasanhodzic and Lo that the performance of the replicating strategies is systematically inferior to that of actual hedge funds." In other words, hedge funds returns still offer alpha even after identifying and capturing the beta. This conclusion confirmed the research of Roncalli and Weisang.

One of the most recent papers to be published added an interesting wrinkle to the analysis of hedge fund returns. All of the previous papers looked at performance using reported hedge fund returns. Adam Aiken, Christopher Clifford and Jesse Ellis[10] sought to determine if hedge fund alpha truly existed after controlling for biases introduced by the self-selective nature of hedge fund reporting to commercial databases. They found "evidence that most of the average fund's alpha can be explained by its decision to voluntarily report its performance to a database; 95 percent of a typical fund manager's measured skill can be explained by whether they report to a database." This is an important contribution to the field because it calls into question whether investors are actually benefiting from the returns purported to be achieved by hedge funds. This bias in reported returns effectively raises the bar for hedge fund replication strategies, as they are being compared to an artificially high benchmark. To the extent that a hedge fund replication product can produce returns that are very close to reported hedge fund returns at a lower cost and without the negative characteristics of limited transparency and liquidity, the benefit of the replication strategy becomes more apparent.

Not All Hedge Fund Replication Strategies Are The Same

Despite the fact that many of the current hedge fund replication strategies are based on the solid principles established by academic researchers, significant differences can be seen in the products based upon the investment process. In this section, we discuss some of the key decisions that need to be

made and use the IndexIQ methodology when necessary as an illustrative example.

Hedge Fund Return Providers

The two major providers of hedge fund returns are Dow Jones Credit Suisse (DJCS) and Hedge Fund Research (HFR). While there are other providers such as Barclay Hedge and MSCI Barra, it is generally acknowledged in the industry that DJCS and HFR are the dominant providers. Both provide returns for individual strategies as well as for broad-based composites. Additionally, both provide returns for investable (open for new investors) and non-investable (closed to new investors) hedge funds. DJCS and HFR both include funds that have at least $50 million in assets. While HFR requires assets greater than $50 million *or* 12 months of trading history, DJCS requires assets greater than $50 million *and* 12 months of trading.

The most important distinction, however, is that DJCS is asset weighted whereas HFR is equal weighted. Asset weighting, we believe, provides a more accurate picture of the asset class, as it represents the total performance of the actual assets invested. This distinction can have an effect on the risk and return profile. As detailed in Figure 1, for the 10 years ending Dec. 31, 2011, DJCS returned 6.44 percent per year with a standard deviation of 5.84 percent for a return/risk ratio of 1.10. Over the same time period, the HFRI Fund Weighted Composite Index (HFRIFWI) had a 5.92 percent annualized return with a standard deviation of 6.52 percent for a return/risk ratio of 0.91. DJCS produced higher returns with a lower standard deviation. Perhaps more importantly, the correlation of DJCS returns to the S&P 500 was 68 percent vs. 80 percent for HFRIFWI. Both had virtually zero correlation to bonds as represented by the Barclays Capital Aggregate Bond Index (BarCap Agg). As many investors use hedge funds to diversify away some of the equity risk in their portfolios, a lower correlation to equities is a very desirable trait. With a better representation of the investments in hedge funds supported by higher returns, lower standard deviation and lower correlation to the S&P 500, IndexIQ selected the DJCS as the basis for its hedge fund replication strategy.

Return Level

There are three levels of returns available when designing a hedge fund replication strategy. First, one can choose to replicate the returns of individual hedge funds. However, any individual hedge fund can completely turn its portfolio over in a short period of time. Thus, using any time series analysis method on individual hedge funds leaves one open to the possibility that prior information becomes irrelevant very quickly.

Alternatively, one can opt to replicate the returns of a broad hedge fund index that aggregates across multiple hedge fund strategies. With the inherent diversification across multiple managers and strategies, one would expect the exposures to be more stable over time as portfolio changes by any individual manager are far less likely to impact the aggregate exposures. However, there is a risk that with so many return series aggregated together, the signal-to-noise ratio falls and it becomes difficult to identify the meaningful exposures. Also, to the extent that the broad indexes have a bias toward a certain strategy based solely on either the assets invested or the number of funds classified in that strategy, the resulting replication product will also have a similar bias. This can be suboptimal, as the allocation to that particular strategy may not be efficient given the expected returns and volatilities of strategies at that point in time. For example, at the start of 2008, the DJCS index had over 35 percent allocated to the equity long/short strategy. The equity long/short strategy went on to lose -19 percent for the year.

The third option is to replicate the returns of individual hedge fund strategies. By using the aggregate returns of a homogenous group of managers, one can potentially avoid the risk of any individual manager changing exposures frequently. Much as a portfolio of securities, such as an industry portfolio, exhibits a much more stable exposure-and-return pattern, a group of hedge funds will also have more stable and consistent exposures and returns due to the natural diversification that occurs. For example, as one fund is increasing its exposure to a certain factor, another fund may be reducing its exposure to the same factor. In such an instance, the net change in the factor-loading at the strategy level will be much smaller than at the fund level. Strategy-level returns also allow for the selection of factors based on an economic analysis as recommended by Amenc et al. [2009]. Finally, having individual hedge fund strategies as building blocks allows for greater flexibility in creating better allocations across strategies.

Statistical Properties

Hedge fund indexes generally comprise hedge funds that report their returns on a voluntary basis. As such, these indexes are susceptible to biases that can arise from managers deciding not to report their returns once the returns are no longer attractive or from managers choosing to begin reporting returns only when they have a successful track record that they can add to the database. Numerous articles have been written about survivorship and back-fill biases in hedge fund returns. Fung and Hsieh [2009][11] found that "[i]n general, return measurement biases can be traced to two key events: when a hedge fund elects to enter one or more databases and when a hedge fund exits a database." Estimates of the effect of these biases on reported returns range from 4-6 percent per annum.[12] Surprisingly, this bias is often used as a counterargument against hedge fund replication. The bias is actually supportive of replication. Replication is often attacked for targeting the "average" manager. Most investors would prefer to have the returns of an "above average" manager. If the performance as reported by the hedge fund indexes is overstated by at least 4 percent per year, then a replication product that can deliver these returns must be "above average."

When working with data sets that contain performance information, it is important to review the data with an eye

Figure 2

Hedge Fund Index Performance In 2008 (%)

	IQ Hedge Long/Short Beta Index	Dow Jones Credit Suisse Long/Short Equity Hedge Fund Index	Dow Jones Credit Suisse Blue Chip Long/Short Equity Hedge Fund Index	HFRI Equity Hedge LS	HFRX Equity Hedge LS
2008	-27.56	-19.74	-29.39	-26.64	-25.45

Sources: Dow Jones Credit Suisse, Hedge Fund Research, Bloomberg, IndexIQ research

toward quality control. Extreme data points can cause a process to produce undesirable outcomes if the data quality is not verified. An example of this issue occurred in November 2008 in the Dow Jones Credit Suisse Equity Market Neutral Hedge Fund Index. Typically, a market-neutral hedge fund will have very low volatility. Indeed, this index had an annualized standard deviation of 2.92 percent from its inception in January 1994 through October 2008. However, in November 2008, a single manager comprising over 40 percent of the index had a return of -100 percent, as its assets were written down to zero due to its exposure to a Madoff Investments fund. As a consequence, the index was down 40.45 percent in November 2008. This return is an almost 14-standard-deviation event. Clearly, using this return in a replication process would cause an undesirable result.

One solution is to identify returns that are extreme relative to the environment and the strategy being evaluated. If an extreme value is detected, an algorithm can be used to estimate a more suitable value to be used in the replication process. This ensures that extreme data values do not corrupt the replication process.

An oft-cited characteristic of hedge funds is the sometimes-illiquid nature of their underlying holdings. This illiquidity can perhaps lead to superior returns over the longer run but can cause difficulties in valuing an asset in the shorter run. If assets are not marked-to-market accurately at the end of each reporting period, the volatility of the reported returns can be muted and the fund returns can appear to be less correlated to exchange-listed assets than they actually are. Low volatility and low correlation to exchange-listed assets are obviously desirable attributes of an investment vehicle. However, misestimation of the true volatility and correlation can introduce errors in the replication process. IndexIQ chooses to employ a process that measures the degree of misestimation of the volatility and correlation, and applies a correction factor designed to yield a better estimate of the true returns as opposed to the reported returns.

Estimation Methods

One of the key decisions one needs to make when designing a replication product is which estimation method to employ. The choices can range from a simple ordinary least squares (OLS) regression method to a more complicated Kalman filter. OLS is best suited for estimating stable, linear relationships, such as factor exposures. Given that many hedge fund returns exhibit time-varying and nonlinear properties, more sophisticated methodologies may be better suited. Amenc et al. researched the impact of using conditional and nonlinear models to create hedge fund clones. They wrote, "... it appears that conditional and non-linear models, which are less parsimonious than their linear counterparts, do not necessarily lead to improved out-of-sample replication." Thus it appears that despite the intuitive appeal of more complex models, the out-of-sample efficacy of OLS is supported by the evidence.

Asset Universe

As Hasanhodzic and Lo showed, exchange-traded assets can serve as viable assets in hedge fund replication. Within the broad universe of assets encompassed by this definition, there are obvious distinctions. One could partition the universe by asset class and choose, for example, to use assets that represent equities only. One could also segment the universe by underlying asset type. Such delineation might group assets into exchange-traded funds versus exchange-traded derivative products. Each group has certain advantages and disadvantages. For example, ETFs may provide potential exposure to a greater list of factors, especially on the corporate fixed-income side where exchange-listed derivatives do not exist. ETFs also provide greater transparency as they are typically index based and are required to disclose positions daily. On the other hand, ETFs may have a higher cost of ownership as there will be expense ratios in addition to transaction costs. Exchange-listed derivatives will have lower fees but may have fewer potential exposures and can also be less transparent and more difficult for end-users to understand.

Strategy Allocation

Given the decision made earlier to replicate hedge fund returns at the strategy level, one must then select a method for allocating across the strategies. There are at least four possible methods:

1. Equal weight – This is the simplest method to understand and implement. One would simply average the exposures across all of the underlying strategies to arrive at the final portfolio.

2. Asset weight – This slightly more complex method assigns a weight to each strategy based upon the distribution of assets across strategies in the hedge fund universe. A key limitation of this approach is that one must have

Figure 3

Hedge Fund Replication Investment Products & Indexes

Ticker	Name	Asset Manager	Incep. Date	3-Mo (%)	1-Yr[a] (%)	3-Yr[b] (%)	3-Yr[c] Std Dev	3-Yr Sharpe Ratio	3-Yr Corr To S&P	Net Exp Ratio[d]	Max Sales Charge	Structure
IQHIX	IQ Alpha Hedge Strategy, Inst Cl	IndexIQ	6/30/08	2.72	-1.91	5.53	8.54	0.66	0.69	1.30	0	Mutual Fund
QAI	IQ Hedge Multi-Strategy Tracker	IndexIQ	3/25/09	1.98	0.26	—	—	—	—	0.75	0	ETF
MCRO	IQ Hedge Macro Tracker	IndexIQ	6/9/09	2.23	-3.42	—	—	—	—	0.75	0	ETF
GARTX	Goldman Sachs Absolute Return, Cl A	Goldman Sachs	5/30/08	2.08	-3.77	1.49	5.80	0.26	0.86	1.66	5.50	Mutual Fund
GAFAX	ASG Global Alternatives, Cl A	Alpha Simplex	9/30/08	0.98	-3.29	4.06	7.91	0.53	0.72	1.61	5.75	Mutual Fund
HDG	ProShares Hedge Replication	ProShares	7/12/11	3.36	—	—	—	—	—	0.95	0	ETF
CSLS	Credit Suisse Long/ Short Liquid	Credit Suisse	2/9/10	3.64	-0.37	—	—	—	—	0.95	0	ETN
CSMN	Credit Suisse Market Neutral Equity	Credit Suisse	9/20/11	1.52	—	—	—	—	—	1.05	0	ETN
HFRIFoF	HFRI Fund of Funds Index	Hedge Fund Research	—	-0.39	-5.64	3.59	4.69	0.75	-0.70	—	—	Index
HFRIFWI	HFRI Fund Weighted Index	Hedge Fund Research	—	1.26	-4.83	7.97	6.78	1.15	0.84	—	—	Index
BarCap Agg	BarCap Aggregate Bond Index	Barclays Capital	—	1.12	7.84	6.77	2.82	2.30	0.00	—	—	Index
S&P 500	S&P 500	Standard & Poor's	—	11.82	2.11	14.11	18.97	0.79	1.00	—	—	Index

Sources: Bloomberg, IndexIQ research

[a] As of 12/31/2011. [b]Periods greater than one year are annualized. [c]Annualized standard deviation of monthly returns. [d]May include a contractual fee waiver

access to the strategy asset weights. Even if one were to have access to this data, it is not clear that this approach is optimal. Asset weighting is very much like market-capitalization weighting in equity indexes. An ongoing debate exists in the industry as to whether asset (market-capitalization) weighting is superior to other methods (such as weighting based on fundamental factors).

3. Subjective weight – This method relies on the forward-looking forecasts of strategists to accurately determine the proper allocation. This requires a person or team to possess a level of skill that must be repeatable over time.

4. Optimized weight – This method uses a rules-based model to determine the allocation based on measurable metrics. For example, one could run a mean-variance (or perhaps some other type of nonlinear) optimization using inputs on estimated return, volatility or correlation.

The IndexIQ methodology employs the last method, providing allocations to each strategy that reflect the best allocation given the available data. Specifically, the combination of strategies is selected to have the highest expected return and correlation to a broad hedge fund index with the lowest expected standard deviation. One interesting feature of this type of process is the ability to allow for short exposures to a particular strategy.

To create a short exposure to a strategy, one simply reverses the signs on the underlying factor exposures. This will create a return series that is designed to track the inverse of that particular hedge fund strategy, which can be advantageous during periods when a strategy has negative returns with high volatility. For example, in 2008, the equity long/short strategy was in the midst of a sharp drawdown. Figure 2 shows that Equity Hedge Long/Short index returns ranged from -19.74 percent (DJCS Long/Short Equity Hedge Fund Index) to -29.39 percent (DJCS Blue Chip Long/Short Equity Hedge Fund Index). By comparison, the IQ Hedge Long/Short Beta Index (which is the IndexIQ index designed to deliver the beta component of returns for the equity long/short strategy) had a return of -27.56 percent. Clearly, the IQ Hedge Long/Short Beta Index had returns similar to the average long/short fund in 2008. However, the allocation to the IQ Hedge Long/Short Beta Index in the composite strategy was on average -33.33 percent in 2008. Thus, the IQ Alpha Hedge Index benefited from having a negative exposure to an underperforming strategy.

Registered Hedge Fund Replication Products

Hedge fund replication products come in a wide range of investment vehicles. Initially, they were only available as indexes. Mutual funds were the first listed products to appear. They were quickly followed by ETFs. Of course, there are also structured products and separately managed accounts available. Figure 3 contains key characteristics of listed hedge fund replication investment products.

While these products clearly differ on a number of dimen-

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and Amos Tversky in 1979. In their paper, they demonstrated that individuals (and investors) are risk-averse and therefore do not always make rational decisions in which they opt for the highest expected value outcome.

In today's investment environment, in which stocks are widely and easily available, the default decision is to opt for stocks, whose risks are largely known. An alternative-investment option—whether commodities, real estate, managed futures or anything else—may be a desirable addition to a portfolio from an economic perspective, but the risks are less known and therefore more threatening.

Stated differently, the relative predictability of stock risk is favored over the uncertainty surrounding the risk in alternatives, even if the portfolio outcome is suboptimal. Of course, this is not to imply that stocks are more legitimate than "alternatives" and other investment options. Rather, the default preference for stocks can be partly explained by the time and expense required, whether spent directly or through advisors, for coming to understand alternatives and their associated risks. It is not a trivial task.

For example, contrast stocks with commodities. There are large and small stocks, growth and value stocks and lots of sectors—but they are all stocks, and a major market move can sweep most of them higher or lower regardless of whether they individually deserve to be so repositioned. They are a true asset class, a cohesive grouping of securities that usually react similarly to economic cycles and that have many other common characteristics.

But beware of transposing this asset-class attitude to commodities. There is no singular commodities market. There are, instead, commodity *markets*. Each one is driven by its own supply and demand factors, which can be radically different from one to another—even when the commodities themselves are related, such as crude oil, gasoline and heating oil. Stock-oriented investors almost always got burned when venturing into commodity markets because of this diversity.

Until, that is, the advent of diversified commodity indexes led to investment vehicles that bundled these individual, disparate markets into one price. Then the floodgates opened, and some $200 billion to $300 billion has flowed into commodity funds, notes and other investment vehicles over the past 20 years because the complicated was magically rendered simple. Or so it seemed.

Underneath, though, commodities are still the churlish individualists they always have been. Just ask the immigrated investors who have reluctantly expanded their "price-earnings" vocabularies to include "Brent" and "WTI," not to mention "contango" and "backwardation."

Perhaps the time will come when the now-murky risks of commodities, commercial real estate, timberlands and even vintage wines also will be "known devils." Until then, the alternatives bucket will continue to seduce some investors and repel others with mysterious booms and busts.

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sions, their overall performance, albeit over a relatively short time period, shows the potential of hedge fund replication products to play a significant role in investors' portfolios. With returns, volatilities and correlations that are approaching those of actual hedge fund indexes, the synthetic products are establishing themselves as viable investment solutions. Moreover, the level of assets under management indicates that investors are beginning to recognize this potential.

Conclusion

The hedge fund replication industry has grown dramatically over the last five years. Thanks to contributions from both the academic community as well as to asset managers, the body of research has expanded to cover the topic from a number of different perspectives. Asset managers have also introduced numerous products to provide synthetic hedge fund exposure. However, despite the fact that most products are based on identifying the common factors that drive hedge fund returns, there are important distinctions in the methodologies employed and the vehicles offered. The key distinctions are discussed in this article to enable an investor to better understand the different replication products being offered and to intelligently select the one that best fits their investment needs.

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