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# Is Alpha Just Beta Waiting To Be Discovered?

## *What the Rise of Hedge Fund Beta Means for Investors*

*Alpha is shrinking, and it's good news for investors. This idea may seem paradoxical. But alpha is really just the portion of a portfolio's returns that cannot be explained by exposure to common risk factors (betas). With the emergence of new betas, the unexplained portion (alpha) shrinks – alpha gets reclassified as beta. The rise of a group of risk factors we call **hedge fund betas** makes this transformation especially relevant today. Hedge fund betas are the common risk exposures shared by hedge fund managers pursuing similar strategies. We believe these risk factors can capture not just the fundamental insights of hedge funds, but also a meaningful portion of their returns. Hedge fund betas are available for investment and can also be used to enhance portfolio construction and risk management. Ultimately, we believe the rise of hedge fund betas will lead not only to the reclassification of alpha, but also to better-diversified portfolios with greater transparency, improved risk control, and – perhaps most importantly – higher net returns.*

## Executive Summary

This paper looks at the nature of alpha and the rise of hedge fund betas – as well as the implications for investors.

### Part I: “Rethinking Alpha”

- Alpha should not be thought of as the return from active management, but rather as a return source that is not associated with any common risk factor.
- As new risk factors emerge, alpha explains a smaller portion of portfolio returns.
- The reclassification of a portion of alpha to a beta is a continuous process that is part of the history of financial innovation.

### Part II: “The Emergence of Hedge Fund Beta”

- Hedge fund betas are common risk factors shared by a group of hedge fund strategies.
- Capturing hedge fund betas requires significant skill, both in defining what is included in the strategies and in implementing them with the necessary techniques.
- Hedge fund betas are distinct from “hedge fund replication” strategies, which may be repackaging traditional betas rather than delivering hedge fund beta.

### Part III: “What It All Means: Implications for Investors”

- Rather than focus on finding alpha, investors should seek out any return source (alpha or beta) that offers positive expected returns and portfolio diversification.
- Investing in hedge fund beta will allow many investors to tap into a new, uncorrelated return source in an efficient and cost-effective manner.
- Hedge fund betas can also serve as a portfolio tool to help investors benchmark their hedge fund managers and improve portfolio construction.

Over time, we believe hedge fund betas will prove to be an important tool for many institutional investors.

**Author’s Note:** While we hope our ideas on alpha and hedge fund beta are provocative, they are neither entirely new nor uniquely ours. Many authors have wrestled with the distinction between alpha and beta and the search for common risk exposures underlying hedge funds. A more complete bibliography is included in the back, but we acknowledge in particular the influence of papers by John Cochrane, Tom Dunn, Andrew Lo and George Main.

Just as much credit is due to the many colleagues at AQR whose formal and informal insights contributed to the views expressed, whose portfolio research underlies the historical data included and whose comments improved the accuracy and clarity of the final text: Cliff Asness, John Liew, Gregor Andrade, Jeremy Getson, Brian Hurst, Ronen Israel, Mike Mendelson, Mark Mitchell, Tobias Moskowitz, Lasse Pedersen, Todd Pulvino and London Thomson-Thurm. The paper would not exist in its present form without the tireless design efforts of Sharon Song.

## PART I: RETHINKING ALPHA

### What Is Alpha?

Colloquially, alpha has come to mean “the excess returns from active management.” But in truth, the concepts of alpha and beta have their roots in portfolio theory.<sup>1</sup> Empirical analysis uses linear regression to decompose the returns of an asset or a portfolio into two components. One component is **beta**, *the portion of returns that can be attributed to one or more systematic risk factors*. Historically, the most common risk factors (“betas”) were traditional investments, like equity and bond markets. More recently, investors have broadened their portfolio analysis to include “exotic” betas, such as emerging market equities, high-yield debt, commodities and real estate. The remaining component is **alpha**, the portion of returns that cannot be attributed to these various risk factors.

This definition makes it clear that “alpha” is not “returns from active management”, but rather “returns that cannot be explained by common risk factors.” This in turn means that as new risk factors are discovered and popularized, the returns attributable to alpha decline and part of alpha is reclassified as beta.<sup>2</sup> Note that this transformation does not in and of itself mean a decline in returns. Alpha’s shrinking is offset by a growing portion of returns that can be attributed to beta. Unless the discovery of a new risk factor actually reduces an investment’s expected return – which may happen if it sparks material inflows – reclassification does not necessarily mean lower returns. In fact, if the new factor lowers investment costs, it can lead to higher expected returns.

	ALPHA	BETA
<b>Colloquial Definition</b>	Returns generated by active management	Returns from passive market exposure
<b>Economic Definition</b>	Returns that cannot be explained by exposure to common risk factors	Returns from exposure to one or more common risk factors

### The Evolution of Alpha and Beta

This economic definition of alpha means that over time, alpha is transforming into beta as new risk factors are discovered and gain recognition.<sup>3</sup> We can put this trend in perspective by doing a quick historical survey.

Before the advent of capitalization-weighted equity indices (more than half a century ago), any investor who used a broker or manager to build a stock portfolio basically had to ascribe the results to the manager’s skill. All of the portfolio’s returns in excess of the risk-free rate would be considered alpha.

Over time, it became apparent that the success or failure of these portfolios was tied to the overall stock market’s performance. There were boom cycles when most portfolios performed well and bust cycles when most portfolios performed poorly. Eventually, with the rise of capitalization-weighted equity indices (such as the S&P 500), investors had a better way to explain their returns. They could now ascribe a good portion of portfolio performance to stock market beta. After considering the impact of stock market beta, the portion of returns attributed to alpha was significantly reduced.

Nonetheless, some active managers continued to beat the market’s return, generating alpha. At some point, however, investors began to realize that many managers were doing similar things to beat the market. For example, some managers overweighted smaller-capitalization stocks, while others overweighted stocks that traded at low price-to-earnings or low price-to-book ratios. Both of these groups tended to outperform the broad stock market indices over time.

The three-factor model of Eugene Fama and Kenneth French drove wider acceptance of size- and value-driven portfolios.<sup>4</sup> The advent of large- and small-cap indices and value and growth indices codified these ideas into betas that investors could use to understand portfolio returns. For managers that had formerly been beating a broad equity-market benchmark simply by holding a portfolio of small-cap or value stocks, this new equation turned what had been an alpha into a beta (even if this was not immediately noticed by all). If investors could invest in the Russell 2000 Value index at low cost, managers could no longer justify high fees for portfolios that beat the market simply by being long small, cheap stocks.

<sup>1</sup> Although the terms “alpha” and “beta” are rooted in the language of statistics, their use in finance likely has its origin in the Capital Asset Pricing Model (CAPM).

<sup>2</sup> For an interesting view of this process, see Dunn (2005).

<sup>3</sup> Some portion of returns may always remain unexplained by known risk factors. And innovation in the form of new strategies and investment techniques may lead to increased alpha.

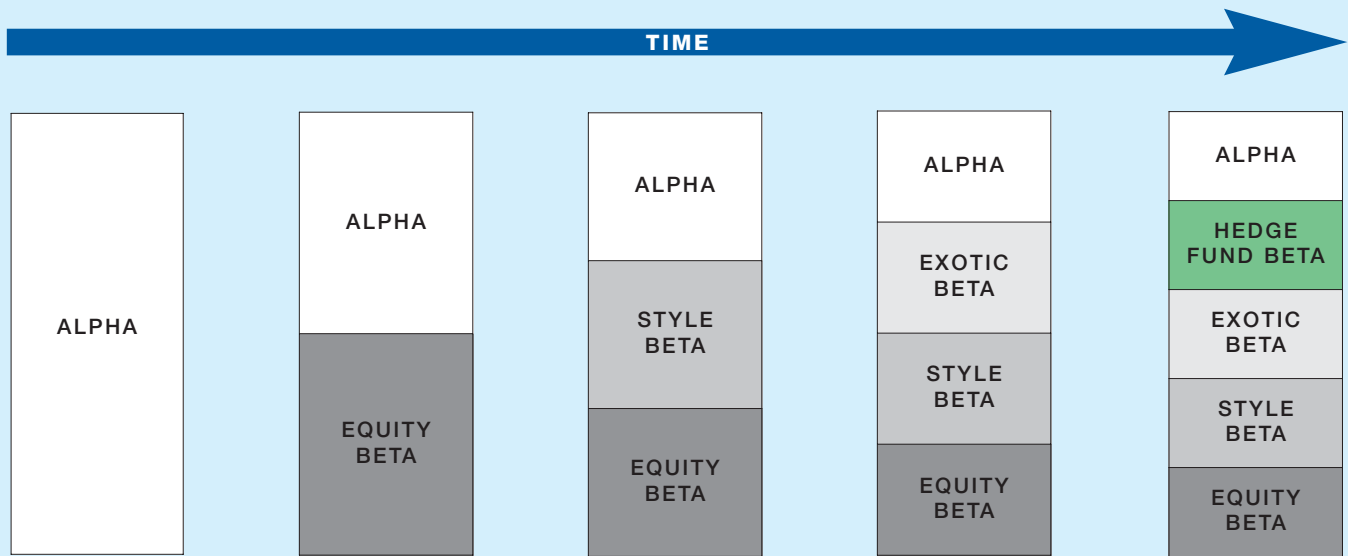
<sup>4</sup> Fama and French (1993) showed that the returns to an individual security or portfolio could be better explained by looking not only at how the overall stock market performed, but also at how subsets of the market (large-cap stocks, small-cap stocks, growth stocks and value stocks) performed.

More recently, investors have diversified their portfolios across a wider range of asset classes than traditional developed-market stocks and bonds. Many of these new investments – commodities, real estate, emerging market equities and debt – fall into the category of “exotic” betas, or investments whose returns can be explained by exposure to less traditional risk factors. Like traditional betas, these tend to be associated with long-term exposure to one or more markets.

This history shows that as financial theory evolves, what once appeared to be an uncorrelated and somewhat mysterious alpha is shown over time to be the return associated with exposure to a relatively understandable risk factor. (See EXHIBIT 2) Today, hedge fund betas are simply the latest – if perhaps more complex – chapter in this history.

**Exhibit 2: The Transformation of Alpha into Beta**

Over time, a growing proportion of returns can be explained as beta – first traditional betas (e.g., S&P 500, Lehman Aggregate), then style betas (e.g., Russell value and small-cap indices), then exotic betas (e.g., commodities, real estate), and now hedge fund betas.



## Part II: The Emergence of Hedge Fund Beta

### What is Hedge Fund Beta?

The transformation of part of alpha into beta is not just a financial concept, but an ongoing, dynamic process. In looking at hedge funds, investors are increasingly recognizing that a meaningful component of their returns may be due to more common risk factors. We call these factors hedge fund betas.

The idea that hedge funds are exposed to common risk factors is not new. In the mid 1990's, our colleagues Mark Mitchell and Todd Pulvino (in their academic lives prior to working with AQR) began researching the risk factors associated with merger arbitrage strategies, eventually constructing a database of all announced merger deals since 1963.<sup>5</sup> More recently, in 2004, Cliff Asness raised the idea that "hedge fund betas" are similar to traditional betas in that they "represent a known implementable strategy, and thus a source of potentially common systematic risk."<sup>6</sup> In both cases, the key idea is that many hedge funds employ similar, relatively well-known processes (albeit with meaningful variations across different funds and managers).

### Hedge Fund Beta: Two Case Studies

As an example of a hedge fund beta, consider merger arbitrage. Traditional merger arbitrageurs go long the companies being acquired (the targets) and, in stock deals, short the companies who are purchasing them (the acquirers). The intuition behind this strategy is that once a merger is

#### Exhibit 3: What is Hedge Fund Beta?

**Hedge Fund Beta:** The common risk exposures shared by hedge fund managers pursuing similar strategies.

- Captures the insights behind a group of hedge fund strategies
- Reflects the same types of risk borne by hedge fund managers
- Earns a risk premium as compensation for this risk; if that risk premium is large, we may think of it as an inefficiency

announced, the target's stock has a binary payoff structure, depending on whether the merger succeeds or fails. Because of this transformation, many existing holders of the target's stock may be anxious to "cash in" on the merger rather than wait for the deal to close with limited further upside. By offering a form of insurance against the deal not closing and providing liquidity to shareholders who want to sell, arbitrageurs capture a risk premium.

Different managers may choose to invest in different mergers, but the "beta" of merger arbitrage comes from capturing the risk premium that exists in the aggregate of all investable deals. Just as stock betas can be created by looking at the performance of a broad universe of stocks, the beta for merger arbitrage can be created by looking at

#### Exhibit 4: Two Hedge Fund Beta Examples\*

The table below summarizes the hypothetical performance of two hedge fund beta strategies: merger arbitrage and convertible arbitrage. These two strategies are systematically designed with the help of AQR/CNH proprietary datasets for merger deals and convertible bonds. The results reflect a hypothetical, value-weighted merger portfolio that holds some exposure to each announced merger deal and a value-weighted convertible arbitrage portfolio that holds a broad cross-section of well-hedged convertible issues. Using our datasets we can uniquely address transaction costs, make portfolio adjustments, properly hedge unwanted risks and apply certain risk limitations through time.

	Hypothetical Annualized Gross Return	Annualized Volatility	Sharpe Ratio	Max Drawdown	Correlations			
					S&P 500	MSCI World	HFRI Converts	HFRI Mergers
<b>Convertible Arbitrage</b>	12.0%	5.2%	1.5	-5.4%	0.0	-0.1	<b>0.6</b>	0.2
<b>Merger Arbitrage</b>	11.8%	5.8%	1.3	-10.8%	0.4	0.4	0.3	<b>0.7</b>

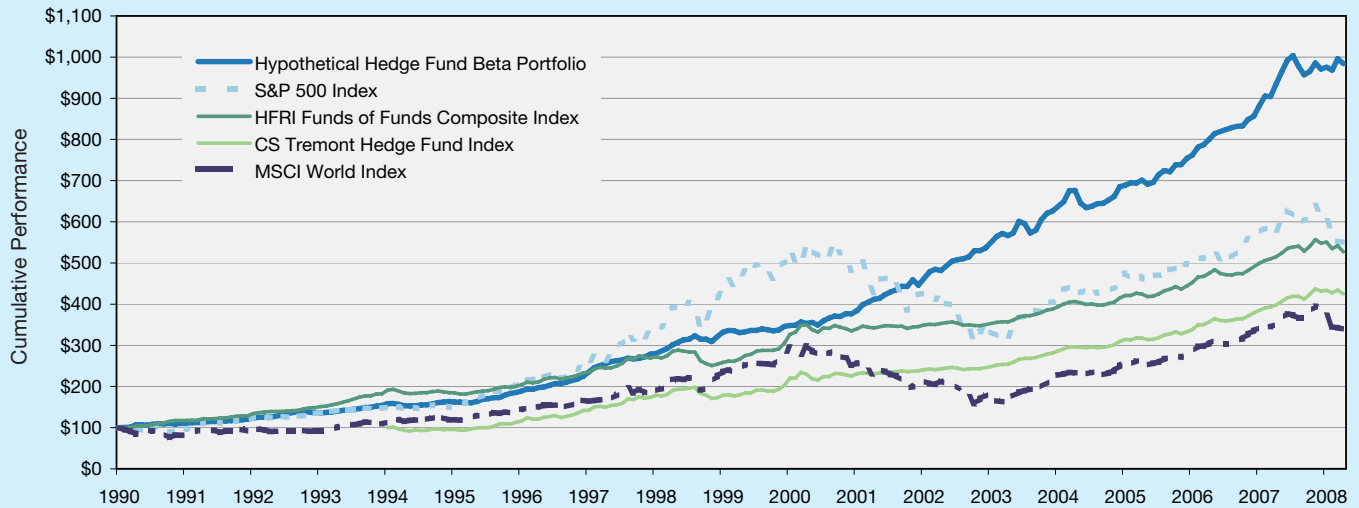
\* These Merger Arbitrage and Convertible Arbitrage backtests use AQR proprietary datasets on all merger deals (dating back to 1963) and all convertible bond issues (going back to 1985). The backtests also assume constant leverage of 1.5:1 for mergers and 2:1 for convertibles. Please see important disclosures relating to hypothetical results at the end of this document. Backtest dates are January 1990 - December 2007.

<sup>5</sup> The creation of this database was the basis for Mitchell and Pulvino (2001), which documents the non-linear payoff to merger arbitrage strategies.

<sup>6</sup> Asness (2004) and Main (2007) have written extensively on the nature of hedge fund beta.

**Exhibit 5: Historical Backtest of a Diversified Hedge Fund Beta Portfolio\***

The figure below shows the hypothetical gross performance of a diversified portfolio of hedge fund betas. The portfolio includes 10 hedge fund strategies: Convertible Arbitrage, Dedicated Short Bias, Emerging Markets, Equity Market Neutral, Event Driven, Fixed Income Arbitrage, Long/Short Equity, Global Macro, Managed Futures and Merger Arbitrage. In aggregate, roughly 65 distinct sub-strategies are included in the portfolio.



	Annualized Gross Return	Annualized Volatility	Sharpe Ratio	Max Drawdown (Peak-Trough )	Correlation with the Hedge Fund Beta Portfolio	Correlation with the S&P 500 Index (1990-Present)	Correlation with the S&P 500 Index (Last 7 Years)
Hypothetical Hedge Fund Beta Portfolio	12.8%	5.8%	1.5	-6%	1.0	0.2	0.2
CS Tremont Hedge Fund Index	10.6%	8.1%	0.8	-14%	0.5	0.5	0.7
HFRI Funds of Funds Composite Index	9.4%	6.7%	0.8	-14%	0.4	0.4	0.7
MSCI World Index	8.1%	13.6%	0.3	-59%	0.2	0.9	1.0
S&P 500 Index	10.7%	13.6%	0.5	-55%	0.2	1.0	1.0

\* The backtest is based on AQR proprietary datasets and run to target an annualized volatility of 6% and employs, on average, leverage of 2 per side (i.e., for \$100 investment, the fund will purchase roughly \$225 securities long and sell short \$175 worth of securities). The underlying 10 hedge fund strategies are roughly equal risk-weighted, and the backtest accounts for transaction costs by incorporating estimates of both commissions and potential market impact. Importantly, the backtest does not include the use of hedging, overlays or tactical strategy allocation. Returns, volatilities and correlations are annualized figures based on quarterly data. In addition, the HFRI and CS Tremont Indices are non-investable. Please see important disclosures relating to hypothetical results at the end of this document.

the performance of a broad pool of merger investments (long the target, short the acquirer). Importantly, this beta reflects the economic intuition behind the strategy, and, as shown in EXHIBIT 4, it also captures a meaningful part of the strategy’s historical return.

Convertible bond arbitrage, like merger arbitrage, has a common risk factor. The strategy works because convertible bonds tend to be issued (and then traded) at a discount to the sum of their parts – which are essentially a straight bond plus a call option on the underlying stock (and a short position in a call option on the bond if it is callable).<sup>7</sup> The discount reflects the liquidity premium that buyers receive as compensation for holding the bonds (which tend to be illiquid). Convertible managers go long a portfolio of convertible bonds and can hedge out some of the unwanted risk factors associated with the bond (interest rate risk, equity risk, credit risk). They are left with a portfolio that, over time, should capture the sum-of-the-parts discount.

Individual convertible arbitrage managers hold distinct portfolios. But, the beta of the strategy – the fundamental risk that these managers share – lies in the performance of convertible bonds relative to the hedging strategies managers use. The hedge fund beta for convertible bonds is created by holding a broad pool of convertible bonds and hedging out the stock, interest rate and credit exposures. The hypothetical returns of this hedge fund beta – based on a proprietary database of all convertible bonds issued since 1985 – are also shown in EXHIBIT 4.

These two examples demonstrate the viability of hedge fund betas. But they are just the tip of the iceberg. While it may not be possible to isolate the common risk factors underlying every hedge fund strategy, we believe hedge fund betas exist for most hedge fund strategies. For instance, Global Macro strategies often exploit differences in the supply and demand for securities across different countries by finding trades with profitable “carry,” where one is essentially paid to hold a position. Fixed Income arbitrage strategies similarly try to find positive carry opportunities within global bond markets. Equity Market Neutral strategies may use a range of criteria (including valuation, momentum and earnings quality) to construct long and short stock portfolios. Commodity Trading Advisors (“CTA’s”) pursue a modified trend-following strategy across a range of liquid futures contracts. Indeed, for almost every category of the hedge fund world (as defined, for example, by the sub-sectors of widely-used hedge fund indices) it is possible to isolate the common risks taken by managers within that sector. EXHIBIT 5 is

a historical backtest showing the hypothetical performance of a diversified portfolio of hedge fund beta strategies.

### Hedge Fund Beta and Hedge Fund Replication

It is important to contrast hedge fund beta with the concept of hedge fund replication. Like hedge fund betas, hedge fund replication strategies seek to give investors hedge fund-like returns with greater transparency and lower costs. Rather than trying to capture the insights of a specific hedge fund strategy, hedge fund replication seeks to generate a return stream that looks like a broad hedge fund index, such as those published by CS / Tremont and Hedge Fund Research.

Different replicators take different approaches, but most use a backward-looking, top-down regression approach to estimate hedge funds’ aggregate exposures to a set of risk factors (usually about six to ten), such as stocks, bonds, currencies, commodities and volatility (e.g., the VIX index). By looking at the recent performance of hedge funds, the replicators try to assess direction and magnitude of hedge funds’ exposures to these risk factors and then mimic them using liquid futures contracts.

This approach has some merit. First, there is an elegance to its simplicity. Using just a few factors keeps transaction costs low, provides transparency, and potentially offers high capacity. Adjusting the factors based on recent performance allows replication portfolios to reflect some of the key characteristics of the overall hedge fund universe at any point in time.

**Exhibit 6: Hedge Fund Beta vs. Hedge Fund Replication**

	<b>Hedge Fund Beta</b>	<b>Hedge Fund Replication</b>
<b>Primary Objective:</b>	Maximize Diversifying Returns	High R <sup>2</sup> to Hedge Fund Indices
<b>Strategy Construction:</b>	Bottom-Up	Top-Down
<b>Investment Approach:</b>	Dynamic strategies using current information	Regression using historical returns
<b>Building Blocks:</b>	Individual Securities	Broad Indices
<b>Traditional Beta Exposure:</b>	Modest	Potentially Large

<sup>7</sup> See Mitchell, Pedersen and Pulvino (2007).

However, we believe replication suffers from a fundamental weakness that lies in its very objectives. Replication portfolios seek to mimic the returns of a broad hedge fund index; but, hedge fund indices themselves often do not have the investment characteristics that investors desire – namely, positive returns with low correlations.<sup>8</sup> Moreover, given that the building blocks of hedge fund replication strategies are a collection of traditional risk factors that most investors already hold in their portfolios (with the possible exception of the VIX), it is hard to imagine these strategies will give investors much diversification. While the replication portfolios will try to vary the weights of these betas over time, the dearth of publicly available data on hedge fund holdings and performance may severely limit the replicators' ability to capture tactical shifts in hedge fund exposures. This suggests that hedge fund replication will be a source of traditional beta rather than hedge fund beta.

For the time being, we believe bottom-up hedge fund beta strategies will be a more valuable portfolio addition. In comparing these strategies, investors have to ask themselves which set of betas they are trying to capture. We believe hedge fund betas represent “the good part” of the risk premiums hedge funds earn – while replication strategies are more likely to deliver materially more traditional beta.

## Hedge Fund Betas in the Real World

If the idea of hedge fund beta has its roots in academia, the practice of hedge fund beta investment is gaining momentum in the marketplace. The practical uses of hedge fund betas are described in more detail in Section III. Before considering these practical applications, investors should understand that hedge fund betas – unlike other betas – cannot move from theory to practice without significant insight and skill. Moreover, the capacity of these betas is limited, both by the magnitude of the market anomalies they seek to exploit and by the significant resources required to capture them (short availability, financing, etc.).

Defining the rules used to construct a beta involves three decisions:

1. Inclusion – which securities are included (portfolio constituents)
2. Sizing – how much of each security to hold (portfolio construction)
3. Rebalancing – how to adjust these holdings over time (changes to #1 and #2)

For most traditional and even exotic beta sources, addressing these issues is relatively straightforward.<sup>9</sup> For hedge fund betas, each is more complex. There is enough variation across hedge funds that determining the constituents of a hedge fund beta strategy is non-trivial. Sizing is an additional challenge. Most hedge fund strategies involve offsetting long and short positions, which means there is no clear way to calibrate size. Rebalancing incurs transaction costs, which means more frequent rebalancing may reduce long-term returns. At the same time, hedge fund betas are inherently dynamic strategies, so portfolios must be assessed constantly and rebalanced regularly in order to preserve the integrity of each strategy. A merger arbitrage strategy that only adjusts positions once a quarter would be dangerous.

The net effect of these issues is that how well hedge fund betas are designed will affect how well they ultimately perform. Defining hedge fund betas requires research, thorough analysis and experienced judgment.<sup>10</sup>

### Exhibit 7: Direct Investment in Hedge Fund Beta Requires Skill

	Skill Set Required
<b>Setting Exposures</b>	Identify hedge fund betas, develop investment strategies and structure portfolios
<b>Implementation &amp; Trading</b>	Adroitly employ leverage, short selling and derivatives, while managing transaction costs and portfolio risk

<sup>8</sup> For a more detailed discussion of the correlation between hedge fund indices and global markets – and the importance of considering lagged betas and illiquid assets in making this assessment – see Asness, Krail and Liew (2001). Evidence suggests that since the publication of this paper, these correlations have only increased. EXHIBIT 4 shows that over the last seven years, the correlation between the S&P 500 index and both the CS Tremont Hedge Fund Index and the HFRI Fund of Funds Index was 0.7.

<sup>9</sup> For traditional betas, constituents can be defined in a number of ways, and the decisions don't matter that much – the S&P 500 and MSCI US indices use different rules to define their constituents, but their performance is highly correlated. For sizing, capitalization weights are often used and data is readily available. Finally, the constituents of most traditional betas don't change all that often, so infrequent rebalancing works just fine.

<sup>10</sup> The role of judgment exists in traditional betas, but not to the same extent. In the US, some betas (the S&P 500 and Russell 1000) are widely used as portfolio benchmarks, while others (the Dow Jones Industrial Average and Wilshire 5000) are less common. Notably, the latter two benchmarks have unusual constructions, with the former holding only 30 names (chosen by a committee) and the latter holding so many names that it can be difficult to implement.



Additional skill is required after hedge fund beta strategies have been defined. Implementation is critical. Hedge funds tend to use a number of techniques to generate returns. These include leverage, shorting, derivatives and the ability to trade frequently and with minimal market impact. These tools are integral to most hedge fund strategies, and, are therefore also required for any hedge fund beta strategy. However, using these techniques requires a meaningful degree of skill, both to control costs (for borrowing stocks, financing and trading) and to manage portfolio risk (associated with shorting, leverage, counterparties and collateral). We believe implementors of hedge fund beta strategies with better and more robust capabilities in implementation – everything from controlling trading costs to managing operational complexities – can deliver better results over the long-term.

In short, creating real-world hedge fund betas requires skill in determining which strategies to include in a portfolio; defining the positions that comprise each strategy; and then implementing (and rebalancing) those positions over time.

### Capacity and Hedge Fund Beta

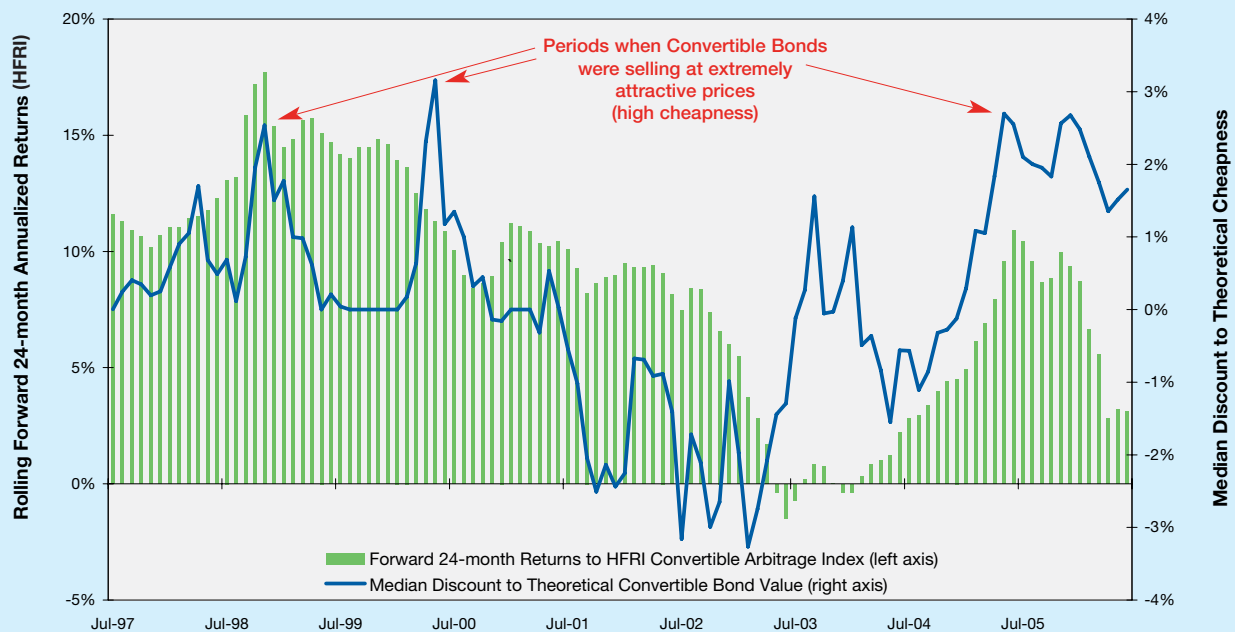
Another distinction between hedge fund betas and traditional betas relates to capacity. With any risk exposure, investors must understand the premium they expect to earn from bearing that risk. Any beta – from the most traditional to the most exotic – can become overcrowded.<sup>11</sup> However, hedge fund betas, which seek to exploit anomalies in global markets, inherently have limited capacity. If too much money seeks to exploit an anomaly, the anomaly will disappear and the expected returns from exploiting it will fall. Conversely, when capital moves out of a strategy, the expected return rises.

Consider the cheapness of convertible bonds, shown in EXHIBIT 8. The cheapness level expands when capital flows out of the strategy (as it did in 1998 and again in 2005). When this occurs, the convertible arbitrage strategy becomes particularly attractive (high expected returns on a risk-adjusted basis). On the contrary, when the strategy becomes crowded and cheapness levels contract, convertible arbitrage is not as attractive.

**Exhibit 8: The “Convertible Spread” Shows the Changing Attractiveness of Convertible Bond Arbitrage Strategies Over Time**

Historically, investing in convertible bonds when they are conditionally attractive (at high cheapness levels) has led to outsized future returns.

#### Convertible Bond Cheapness\* and Forward Rolling 24-month Returns



Source: AQR, HFRI. \*Theoretical cheapness is hypothetical in nature. Please see disclosures relating to hypothetical results at the end of this document.

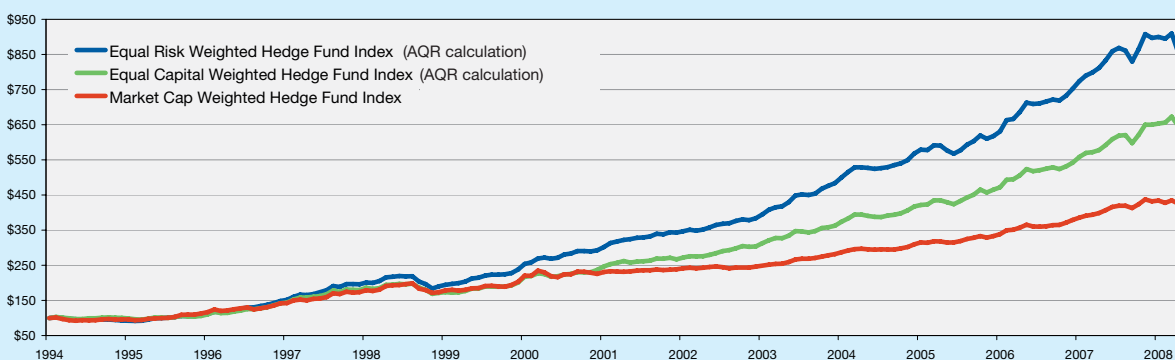
<sup>11</sup> Consider the US stock market – as traditional a beta as you can get – in the late 1990s. With several years of strong performance as a tailwind, US equities were viewed as a “can’t lose” proposition. More and more money flowed into the markets and prices continued to rise. Especially with the benefit of hindsight, one can easily argue that the risk premium to equities contracted as capital flooded the market.

### Exhibit 9: Maintaining A Balanced Risk Allocation Improves the Performance of a Hedge Fund Portfolio

The cumulative performance of three hedge fund portfolios is presented below. All three portfolios contain the same constituents – 10 CS Tremont hedge fund sub-indices: Convertible Arbitrage, Dedicated Short Bias, Emerging Markets, Equity Market Neutral, Event Driven, Fixed Income Arbitrage, Global Macro, Long/Short Equity, Managed Futures and Multi-Strategy. However, each index weights the 10 constituents differently.

Market Capitalization weighting allocates investment dollars according to the proportion of capital invested in each strategy to the total capital invested in all 10 strategies. As these weights change through time, market capitalization weighting can lead to higher allocations to more crowded strategies. Equal Capital weighting allocates investment dollars equally to each of the 10 strategies. Equal Risk weighting allocates investment dollars according to the volatility of each of the 10 underlying strategies. All three Indices are net returns and scaled to the same 7.5% annualized volatility.

#### Hypothetical Cumulative Performance of Investments in Equal Weighted & Market Cap Weighted Indices



Source: CS Tremont and AQR. Please see important disclosures relating to hypothetical results at the end of this document.

The fact that hedge fund betas can get more or less crowded over time suggests that investors should consider a rebalancing policy to adjust their exposures. This is particularly true because money tends to flow to different strategies not based on their expected risk premium, but rather on how well they have done in the recent past. Perversely, this can lead to distortions where strategies with little or no risk premium (often due to recent strong performance) nonetheless attract the most capital, shrinking their expected return further, while strategies offering more risk premium (perhaps due to poor performance) see their investors flee if they believe the strategy is “no longer working.”<sup>12</sup>

Given this behavior, even maintaining a consistent risk allocation over time should help by preventing investors from increasing their allocation to seemingly “hot” strategies that offer little risk premium at the expense of unloved strategies that are particularly attractive. (This is illustrated in EXHIBIT 9.) Investors who can make well-timed tactical moves between different hedge fund betas – and manage the associated transaction costs – may be able to further boost their performance.<sup>13</sup>

<sup>12</sup> This phenomenon highlights the importance of risk management in allocating capital across strategies. Strategies that suffer capital flight can exhibit concentrated periods of poor performance.

<sup>13</sup> Of course, the return from this kind of timing is alpha, not beta [given the thesis of this paper, we should add the caveat: “for the time being”]. For more on investor behavior and the timing of hedge fund strategies, see Mitchell, Pedersen and Pulvino (2007)

### PART III: WHAT IT ALL MEANS: IMPLICATIONS FOR INVESTORS

#### Moving Beyond Alpha

Since the bursting of the technology bubble, institutional investors have dramatically increased their exposure to hedge funds.<sup>14</sup> This search for alpha coincides with dimming investor expectations for future market returns.<sup>15</sup>

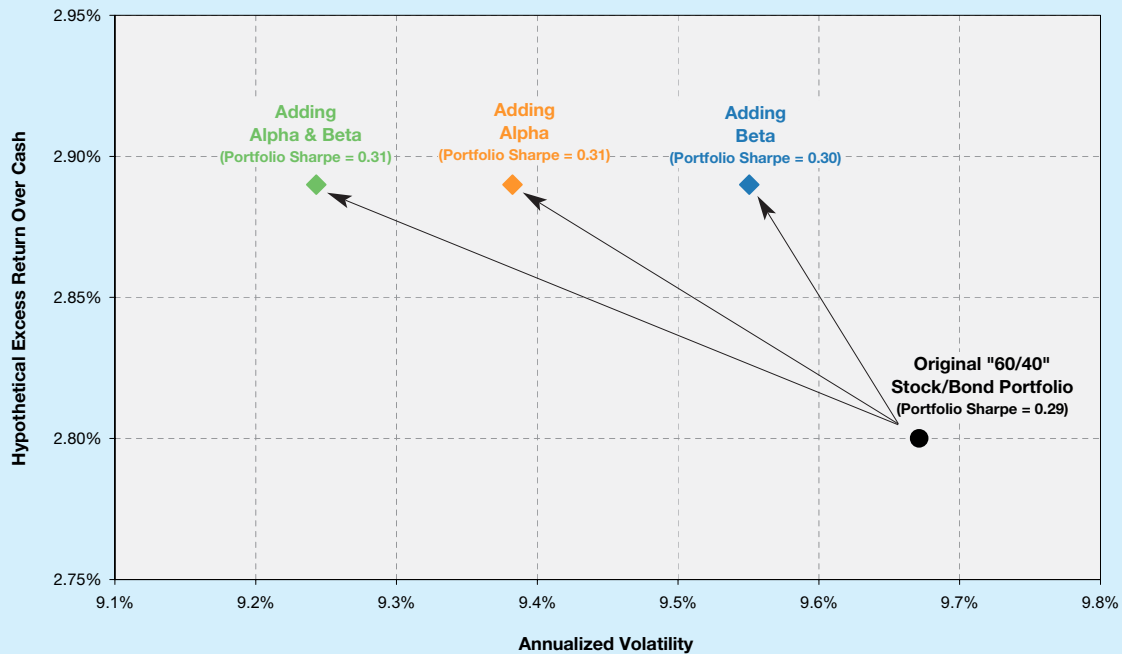
But this focus on alpha masks a broader need faced by investors. Ultimately, alpha's appeal lies in its positive expected return and low correlation to other portfolio investments. We believe that investors actually want any investment that offers a positive expected return and low correlation with their core portfolio, whatever it is called. Investors can improve portfolio performance by adding new investments that have low correlations to their existing

holdings, whether those investments are alpha (return sources with no underlying risk factor exposure) or various betas (return sources based on one or more underlying risk factors). The key to adding new beta sources is that they have low correlation with the portfolio's existing risk exposures.

EXHIBIT 10 shows the risk and return characteristics of a 60%/40% stock/bond portfolio and the impact of adding two hypothetical return sources, one alpha source and one beta source. Both hypothetical return sources have identical Sharpe ratios (0.25) and annualized volatilities (10%), but the beta has a low, positive correlation of 0.15 to both stocks and bonds, while alpha has zero correlation to both stocks and bonds. Note that while both return

**Exhibit 10: Alpha and Beta Can Improve Portfolio Efficiency**

In the analysis presented below we assume Alpha and Beta each has the same Sharpe ratio (0.25) and annualized volatility (10%). However, Alpha has zero correlation with stocks and bonds, while Beta has a low positive (0.15) correlation with stocks and bonds. By shifting into each strategy individually (orange and blue diamonds), we move 10% of capital out of the 60/40 portfolio and into each of the respective strategies. Alternatively, we could shift into both Alpha and Beta (green diamond), which in this case involves moving 6.5% into each return source, for a total shift of 13%.



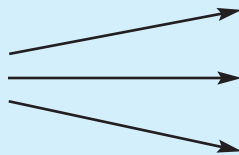
Source: AQR proprietary datasets. Risk and Return for 60/40 portfolio based on AQR market assumptions. Please see important disclosures relating to hypothetical results at the end of this document.

<sup>14</sup> According to the 2007-2008 *Russell Investments Survey on Alternative Investing*, the average strategic allocation to hedge funds among institutional investors in North America increased from 2.5% in 2001 to 7.5% in 2007 with a forecast of 8.9% in 2009. For Europe, the figures are 1.7% in 2001, 7.4% in 2007 and 8.4% estimated in 2009.

<sup>15</sup> According to Goldman Sachs, the average portfolio return assumption for companies in the S&P 500 with defined benefit plans fell from 9.0% in 2002 to 8.1% in 2007. See Moran, Michael and Abby Joseph Cohen, "Pension Review 2008: Funding a profit boost?" (Research Report), June 16, 2008, p. 16.

**Exhibit 11: What Investors Want****Investors Want Returns That Are:**

- **Positive over the long-term**
- **Uncorrelated to their existing portfolio exposures**

**Three Potential Sources for these Returns:**

- Alpha ( $\alpha$ )** – returns uncorrelated with any common risk factor
- Hedge Fund Beta (HF $\beta$ )** – returns from common risk factors associated with hedge fund strategies
- Beta ( $\beta$ )** – returns from market exposures not already in the portfolio (e.g., commodities, emerging markets)

sources improve the portfolio's efficiency, the combination is better than any individual strategy. In other words, a rational investor should want exposure to both.

Ultimately, investors should focus on adding new return sources to their portfolios, provided the risks required to earn those returns a) are reasonable and b) exhibit low correlation to their core portfolios.

**Buying Hedge Fund Beta**

As investors broaden their investment search from alpha to other new, non-correlated return sources, we expect they will seek to get additional exposure to hedge fund betas. We believe many portfolios have little exposure to these strategies. The easiest and most efficient way to gain exposure may be through direct investment in hedge fund betas. Today, hedge fund beta strategies are in their infancy, with only a handful of vehicles offered. But, we believe they have the potential to be a powerful contributor to portfolio returns.

We expect most investors in hedge fund betas will hire managers to make these direct investments on their behalf, just as they do for traditional betas. Creating hedge fund betas, as noted above, requires skill in both definition (rules for inclusion, sizing and rebalancing of securities) and implementation (trading, financing, risk management). More fundamentally, hedge fund beta managers need to define a universe of hedge fund beta strategies that merit investment and a framework for allocating capital to those various strategies. The capacity constraints on hedge funds, as well as the historical cycles of over- and under-capitalization of hedge fund strategies, mean that in addition to setting appropriate strategic allocations, managers should also consider making tactical deviations.

Investors contemplating direct investment in hedge fund betas should scrutinize managers' experience, staffing and resources. They must assess the strategy selection process (which hedge fund betas are included), as well as the specific investment process for each strategy and the details of implementation. They must also consider if risk management tools and operational controls are in place at the portfolio level (allocations across hedge fund betas) and the individual strategy level (positions held in each strategy).

Given the challenges of direct investment in hedge fund beta, the capacity constraints and the level of skill involved, these strategies should command greater fees than traditional stock and bond market betas. However, the all-in cost of hedge fund beta should still be meaningfully lower than the costs of investing in individual hedge fund managers or funds of funds. Moreover, hedge fund betas let investors access a "pure" source of hedge fund risk premiums. By contrast, most hedge funds and funds of funds bundle together hedge fund betas with static exposure to traditional and exotic betas (and perhaps alpha). In the final analysis, hedge fund beta may be a better portfolio diversifier than many actual hedge funds.

**Conclusion: The Future of Hedge Fund Beta**

Throughout the history of financial markets, understanding and accepting new risk factors has led to the recognition that what was once considered a part of alpha is in fact beta. The emergence of hedge fund betas is just part of a much longer story, and the past evolution of alpha and beta lets us anticipate how the future will play out.

Historically, the rise of new betas has had three specific effects on the practice of investment management. First and foremost, new betas open new investment opportunities,

allowing direct exposure to risk factors such as global equity or high-yield credit. In addition, the new betas become part of the process of portfolio construction and risk management. Investors use indices like the Goldman Sachs Commodity Index to help them measure how much of their portfolio risk comes from commodities and decide if this is the optimal amount. Finally, each new beta becomes a yardstick investors can hold up against their existing investments to see whether their managers are adding or subtracting value – witness the widespread use of the S&P 500 as a benchmark for US equity managers.

Hedge fund betas – notwithstanding the unique challenges associated with creating and implementing them – will likely follow a similar pattern, albeit with greater complexity and more limited capacity. Hedge fund betas allow direct investment in a new, more efficient source of portfolio returns. They can be used for benchmarking existing hedge fund managers, by helping investors understand how much of a given hedge fund’s return is actually alpha. They can be used for risk management, by giving investors a clearer understanding of the risks in their portfolios and, perhaps, enough comfort and understanding to open the door to larger hedge fund allocations over time. Finally, we distinguish hedge fund beta from hedge fund replication, which may deliver the least desirable part of hedge funds (market beta), and, therefore lead to a far less diversifying investment.

Hedge fund betas promise a new chapter in portfolio management. We believe at the end of the day, hedge fund betas will allow investors to run portfolios that are better diversified, more efficient, and, therefore more likely to achieve their long-term net return targets.

**Exhibit 12: Hedge Fund Beta Opens New Opportunities for Investors**

**Direct Investment**

- Hedge fund beta exposures without investing in hedge funds or funds of funds
- Can provide better transparency, greater liquidity and lower costs than hedge funds

**Manager Assessment**

- Benchmark to assess hedge fund managers or funds of funds
- Portfolio attribution tool to assess style purity

**Portfolio Construction**

- Comparison of actual portfolio hedge fund beta exposures versus goals
- Information to help drive investment policy decisions

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Gross performance results do not reflect the deduction of investment advisory fees, which would reduce an investor's actual return. For example, assume that \$1 million is invested in an account with the Firm, and this account achieves a 10% compounded annualized return, gross of fees, for five years. At the end of five years that account would grow to \$1,610,510 before the deduction of management fees. Assuming management fees of 1.00% per year are deducted monthly from the account, the value of the account at the end of five years would be \$1,532,886 and the annualized rate of return would be 8.92%. For a ten-year period, the ending dollar values before and after fees would be \$2,593,742 and \$2,349,739, respectively. AQR's asset based fees may range up to 2.85% of assets under management, and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate. Performance fees are generally equal to 20% of net realized and unrealized profits each year, after restoration of any losses carried forward from prior years. In addition, AQR funds incur administrative fees and may have a redemption charge of 2% based on gross redemption proceeds may be charged upon early withdrawals. Please refer to the Fund's Private Offering Memoranda and AQR's ADV Part II, Schedule F for more information on fees. Consultants supplied with gross results are to use this data in accordance with SEC, CFTC, NFA or the applicable jurisdiction's guidelines.

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