

Brian Crowell, CFA  
Vice President

Summer 2012

Ronen Israel  
Principal

David G. Kabiller, CFA  
Founding Principal

Adam Berger, CFA\*

# Is Alpha Just Beta Waiting To Be Discovered?

## *What 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.

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, Mike Mendelson, Mark Mitchell, Tobias Moskowitz, Lasse Pedersen, Todd Pulvino, Dan Villalon and London Thomson-Thurm. The paper would not exist in its present form without the tireless design efforts of Jennifer Buck.

\* This is a revised and updated paper originally written in 2008 when Berger was at AQR

Please read important disclosures at the end of this paper.

## Executive Summary

This paper looks at the nature of alpha and the emergence 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 evolution that is part of the history of financial innovation.

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

- Hedge fund betas are common risk factors or strategies shared by a group of hedge fund styles.
- 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 may 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.

## 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, alpha and beta. Beta is the portion of returns that can be attributed to one or more systematic risk factors. Historically, the most common risk factors (“betas”) were from traditional investments, like equity and bond markets. More recently, investors have broadened their portfolio analysis to include other 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.<sup>2</sup>

Figure 1: Two Definitions of Alpha and Beta

	Alpha	Beta
Colloquial Definition	Returns generated by active management	Returns from passive market exposure
Economic Definition	Returns that cannot be explained by exposure to common risk factors	Returns from exposure to one or more common risk factors

Source: AQR.

This definition makes it clear that “alpha” is not “returns from active management,” but rather “returns that cannot be explained by betas.” 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>3</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 net returns.

<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 a more in-depth review of the theoretical and practical differences between alpha and beta, see Ilmanen and Israel (2012).

<sup>3</sup> For an interesting view of this process, see Dunn (2005).

## The Evolution of Alpha and Beta

The economic definition of alpha means that over time, alpha transforms into beta as new risk factors are discovered and gain recognition.<sup>4</sup> We put this trend in perspective in Figure 2.

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 any of 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 managers' 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.

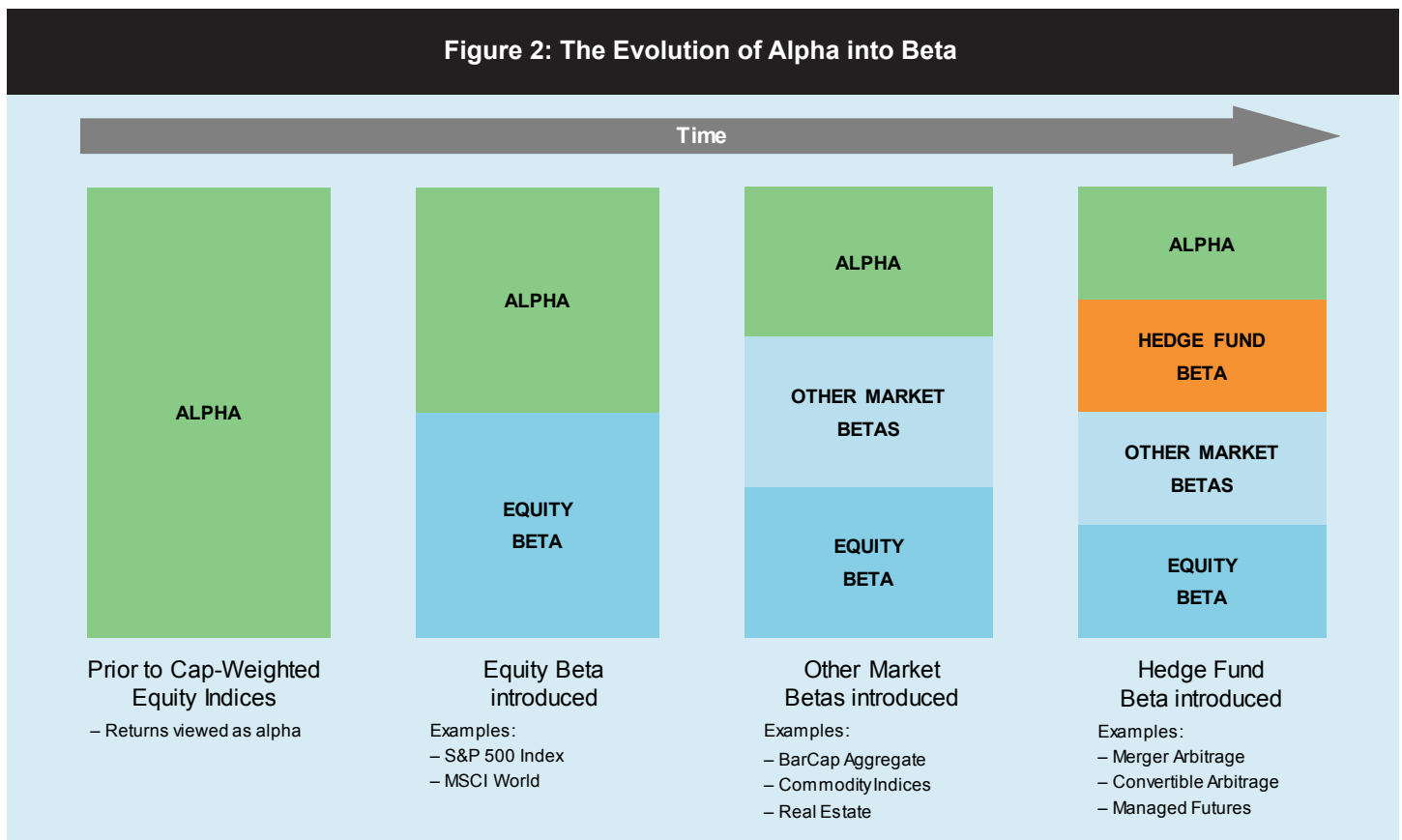
<sup>4</sup> Some portion of returns may always remain unexplained by known risk factors, and innovation in the form of new strategies and investment techniques may lead to increased alpha.

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>5</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 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>5</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.

Figure 2: The Evolution of Alpha into Beta



Source: AQR.

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 “other market 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 tends to become the return associated with exposure to a relatively understandable risk factor. Today, hedge fund betas are simply the latest – if perhaps more complex – chapter in this history.

## 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 evolution. In looking at hedge funds, investors are increasingly recognizing that a meaningful component of returns may be due to 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-1990s, 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>6</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>7</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: Some Examples

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 announced, the target's stock has a binary payoff structure depending on whether the

<sup>6</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>7</sup> Asness (2004) and Main (2007) have written extensively on the nature of hedge fund beta.

### Figure 3: Three Sources of Returns

**Alpha** - returns uncorrelated with any common risk factor

**Hedge Fund Beta** - returns from common risk factors associated with hedge fund strategies

**Beta** - returns from market exposures not already in the portfolio (e.g., commodities, emerging markets)

#### Hedge Fund Beta or Hedge Fund Premium or Hedge Fund Risk Premium?

Related terms for hedge fund beta are hedge fund premium and hedge fund risk premium, which distinguish the idea from the traditional, long-only connotation of “beta”. No term is perfect – strategies that do not involve a transfer of risk but instead seek to capture a market inefficiency are not necessarily betas *or* premiums. Still, either term is useful for investors seeking to systematically define (or capture) this source of returns.

Source: AQR.

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 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 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 – 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). The discount reflects the liquidity premium that buyers receive as compensation for holding the bonds, which tend to be less liquid than their underlying components. 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 and 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 hedges.

Another example is managed futures, which unlike merger and convertible arbitrage, does not seek to capture relative value opportunities. Instead, the driver of most managed futures strategies is trend-following or momentum investing; that is, buying assets that are rising and selling assets that are declining.<sup>8</sup>

The lifecycle of a trend is shown in Figure 4. A catalyst – e.g., a positive earnings release, a supply shock or a demand shift – causes the value of a stock, commodity, currency or bond to change. (The change in value is immediate, as shown by the solid green line.) The market price (shown by the black line) moves up as a result of the catalyst, but it initially underreacts and therefore continues to go up for a while. Research has linked trends to a number of behavioral tendencies and market frictions that lead to actions that slow down the process of true price discovery.<sup>9</sup>

<sup>8</sup> Academic research on momentum returns includes: Asness (1994, 1995), Asness, Moskowitz, and Pedersen (2009), Jegadeesh, and Titman (1993), Moskowitz, Ooi and Pedersen (2009).

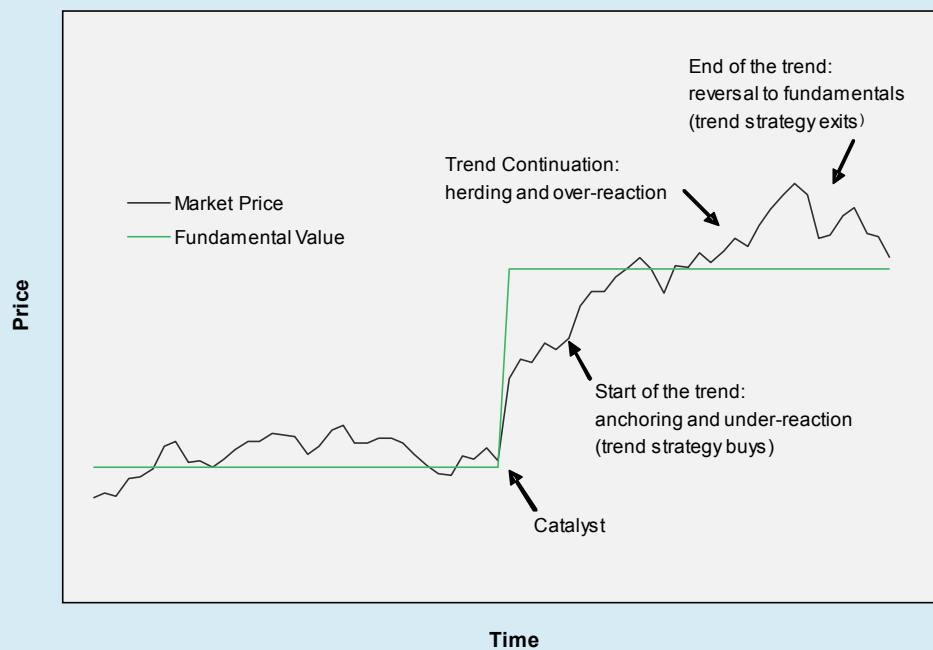
<sup>9</sup> These include herding and feedback trading (De Long et al. [1990], Bikhchandani et al. [1992]), confirmation bias and representativeness (Wason [1960] and Tversky and Kahneman [1974]), and risk management (Garleanu and Pedersen [2007]).

What matters to investors is that a hedge fund beta approach to managed futures can be built using trend-following strategies across a wide spectrum of assets.

These three 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 (see Figure 5). 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 relative value 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. 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. These common risks can offer positive long-term risk-adjusted returns, and tend to have low correlations to each other, as shown in Figure 7.

**Figure 4: Lifecycle of a Trend**

Trends exist due to investor biases and non profit-seeking market participants. Managed futures strategies seek to profit from these trends.



Source: “Understanding Managed Futures” by Brian Hurst, Yao Hua Ooi, and Lasse Pedersen. This chart is a hypothetical example, and does not represent an actual investment.

**Figure 5: Objectives of Nine Hedge Fund Betas**

- Convertible Arbitrage:** Capture the discount of many convertible bonds relative to the fair value of their constituent parts (bond + call option)
- Dedicated Short Bias:** Profit from the inability of many investors to go short companies that are overpriced relative to their fundamentals
- Emerging Markets:** Pursue strategies including Global Macro and various equity strategies by trading securities and currencies of emerging markets
- Equity Market Neutral:** Capture systematic mispricing in global equity markets, typically between different stocks in the same sector
- Event Driven:** Trade mispriced securities whose value should converge in a corporate event
- Fixed Income Relative Value:** Capture a range of mispricings in global bond and currency markets, including those created by market participants who are not profit-maximizing
- Global Macro:** Capture mispricings across major global asset classes, including stock, bond, currency and commodity markets
- Long/Short Equity:** Pursue a range of opportunities in global stock markets, including relative value between sectors and growth-based stockpicking
- Managed Futures:** Profit from the tendency of assets to exhibit short- and long-term trends by investing in liquid futures contracts

Source: AQR.

Note: These descriptions are meant to provide insight into the drivers of the above alternative strategy returns, and are not exhaustive.

## 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. However, 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 Dow Jones / Credit Suisse and Hedge Fund Research (see Figure 6). 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. 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.

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

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

	Hedge Fund Beta	Hedge Fund Replication
Primary Objective:	Maximized diversifying returns	High R <sup>2</sup> to hedge fund indices
Strategy Construction:	Bottom-up	Top-down
Investment Approach:	Dynamic strategies using current information	Regression using historical returns
Building Blocks:	Individual securities	Broad indices
Traditional Beta Exposure:	Modest	Potentially large

Source: AQR.

with low correlations.<sup>10</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 volatility), 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

<sup>10</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 their study, these correlations have only increased. Over the last ten years, the correlation between the S&P 500 index and the DJCS Hedge Fund Index was 0.7, and between the HFRI Fund Weighted Index was 0.8.

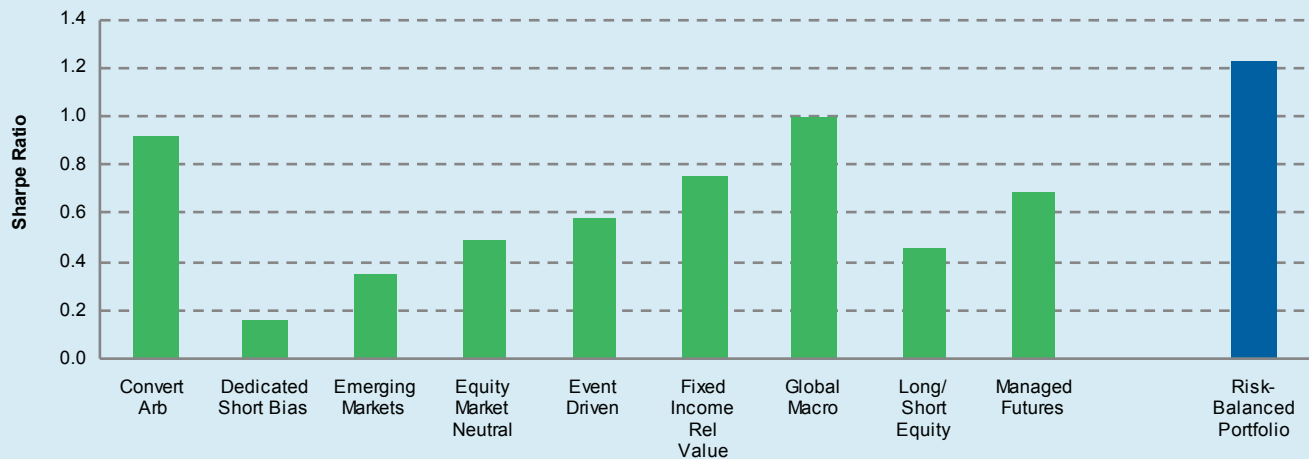


**Figure 7: A Hypothetical Hedge Fund Beta Portfolio**

**Hedge Fund Betas May Offer Strong Diversification Benefits...  
(Correlations of Hypothetical Returns, 1994-2011)**

	<i>Convert Arb</i>	<i>Dedicated Short Bias</i>	<i>Emerging Markets</i>	<i>Equity Market Neutral</i>	<i>Event Driven</i>	<i>Fixed Income Rel Value</i>	<i>Global Macro</i>	<i>Long/Short Equity</i>	<i>Managed Futures</i>
Convert Arb	1.0								
Dedicated Short Bias	0.0	1.0							
Emerging Markets	0.0	-0.2	1.0						
Equity Market Neutral	0.0	0.0	0.1	1.0					
Event Driven	0.1	0.0	0.3	0.1	1.0				
Fixed Income Rel Value	0.0	0.0	0.4	0.1	0.1	1.0			
Global Macro	-0.1	0.0	0.3	0.2	0.2	0.4	1.0		
Long/Short Equity	0.0	-0.1	0.3	0.5	0.3	0.2	0.4	1.0	
Managed Futures	0.0	0.0	0.0	0.1	0.0	0.1	0.5	0.3	1.0
<b>Median</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.3</b>	<b>0.3</b>	<b>0.1</b>

**...And Can Be Captured in a Portfolio  
(Hypothetical Returns, 1994-2011)**



Source: AQR. Correlations and hypothetical returns for alternative strategies are calculated using hypothetical AQR models. Please see important risk disclosures relating to hypothetical results at the end of this paper.

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**

While the idea of hedge fund beta has its roots in academia, the practice of hedge fund beta investment is gaining momentum in the marketplace. Before considering 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)

**Figure 8: 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

Source: AQR.

For most sources of market beta, addressing these issues is relatively straightforward.<sup>11</sup> For hedge fund betas, the task is more complex, as defining hedge fund betas requires research, thorough analysis and experienced judgment.<sup>12</sup> There is enough variation across hedge funds that even determining the constituents of a hedge fund beta strategy is non-trivial.

After hedge fund beta strategies have been defined, implementation is critical. For example, 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. For example, a merger arbitrage strategy that only adjusts positions once a quarter would be dangerous.

In addition, hedge funds tend to use a number of tools to generate returns. These include leverage, shorting and derivatives. These tools are integral to most hedge fund strategies and are therefore also required for any hedge fund beta strategy. Using these tools 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 implementers of hedge fund beta strategies with better and more robust capabilities in implementation – everything from

<sup>11</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 is generally sufficient.

<sup>12</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 price-weighted and holding only 30 names (chosen by a committee), and the latter holding so many names that it can be difficult to implement.

controlling trading costs to managing operational complexities – can deliver better results over the long-term (see Figure 8).

In short, providing 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. In sum, each of these components is crucial and ultimately will affect how well a given hedge fund beta strategy will perform.

## 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 crowded.<sup>13</sup> However, hedge fund betas, which seek to exploit anomalies in global markets, have inherently limited capacity. If too much money seeks to exploit an anomaly, the anomaly will shrink and the expected returns from exploiting it will fall. Conversely, when capital moves out of a strategy, the expected return rises.

Consider convertible arbitrage, which has generated an attractive long-term, risk-adjusted return. As capital flows in and out of this strategy, convertible bonds can become more or less cheap, potentially creating tactical opportunities (see Figure 9). For example, cheapness increased in 2005 and 2008-2009 as the strategy became undercapitalized, making expected risk-adjusted returns of convertible arbitrage conditionally attractive.

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 expected returns further, while strategies offering more risk premium (perhaps due to poor recent performance) see investors flee because the strategy is “no longer working.”<sup>14</sup>

<sup>13</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.

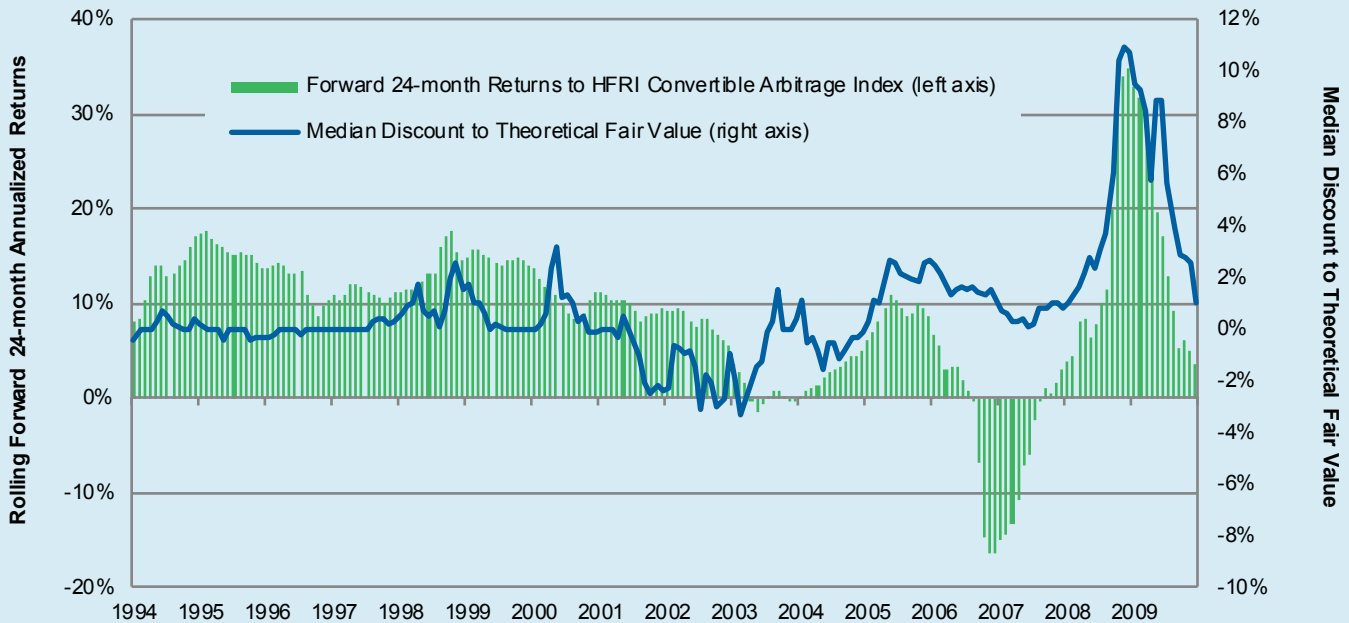
<sup>14</sup> This phenomenon highlights the importance of risk management in allocating capital across strategies. Strategies that suffer capital flight can exhibit concentrated periods of poor performance. For more on investor behavior and the timing of hedge fund strategies, see Mitchell, Pedersen and Pulvino (2007).



**Figure 9: 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.

Note: Theoretical cheapness is hypothetical in nature. Please see disclosures relating to hypothetical results at the end of this document.

For traditional equity investors, market-cap weighting is the standard approach to allocation. But for alternatives investors, this approach results in a concentrated portfolio (Figure 10), as the majority of assets are in just a few strategies. In 2011, for example, three hedge fund styles had approximately 75% of all hedge fund AUM.<sup>15</sup> This “market-cap” alternatives portfolio is highly concentrated, meaning investors miss out on much of the benefits of diversification. Equal-dollar weighting is another common approach, but here strategies with higher volatility per dollar make a disproportionate contribution to overall risk.

Given this behavior, maintaining a consistent risk allocation over time should help prevent investors from increasing their allocation to seemingly “hot” strategies that offer little risk premium at the expense of unloved strategies that are particularly attractive. Such an approach may also improve returns. Why? Even the best-performing individual strategies can realize substantial short-term drawdowns and go through extended periods of anemic returns. Each of the strategies in Figure 7 has realized a double-digit drawdown historically (some exceeding -30%). A portfolio that is dominated by just a handful of these strategies may suffer

disproportionately in periods of underperformance. By contrast, a portfolio that is diversified by risk tends to be more resilient. Beyond risk-based diversification, 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>16</sup>

**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. This search for alpha coincides with dimming investor expectations for future market returns.<sup>17</sup>

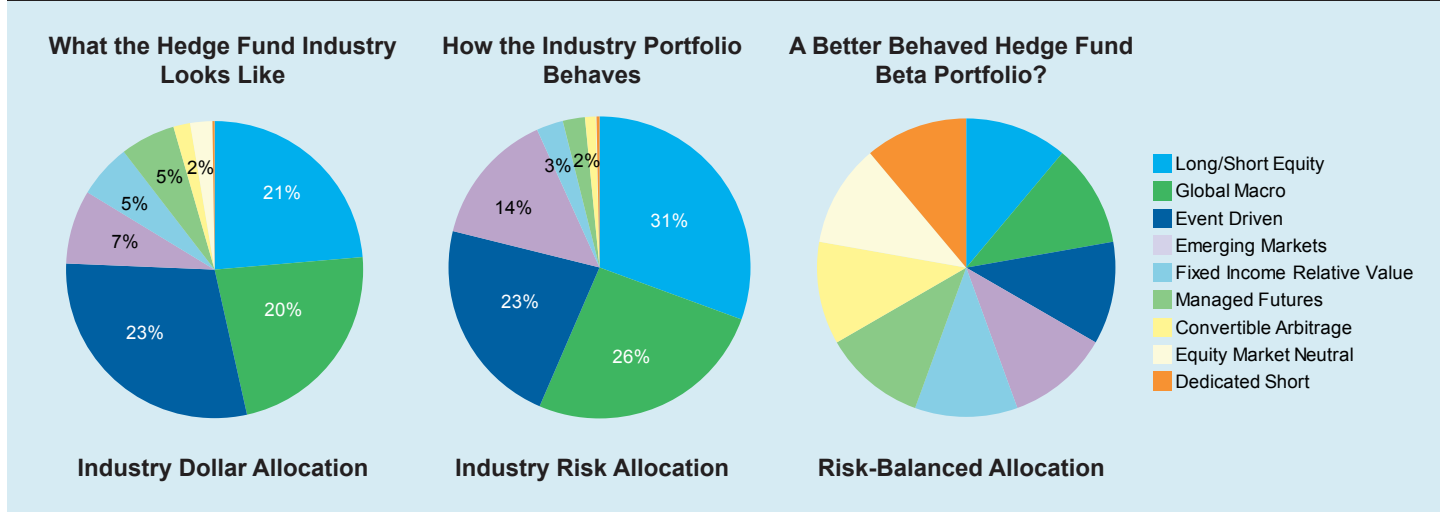
But this focus on alpha masks a broader need faced by investors. Ultimately, alpha’s appeal lies in its positive expected return and low correlation to other portfolio investments – and these qualities are not unique to alpha.

<sup>16</sup> One could argue that the returns from timing is alpha, not beta. For more on this topic, see Ilmanen and Israel (2012).

<sup>17</sup> For more on forward-looking returns or traditional assets and how hedge fund betas may fit into portfolios, see Asness and Ilmanen, “The 5 Percent Solution” (2012).

<sup>15</sup> Source: Dow Jones Credit Suisse.

**Figure 10: Multiple Hedge Fund Betas Do Not Guarantee Diversification**



Source: AQR. Industry dollar allocations based on DJCS hedge fund index as of 12/31/2011. Risk allocation is approximated using AQR calculations, and for illustrative purposes only.

Investors can potentially improve portfolio performance by adding any new investment that has low correlations to their existing holdings, whether those investments are alpha (return sources with no underlying risk factor exposure) or different betas (return sources based on one or more underlying risk factors). We believe that investors should want any investment that offers a positive expected return and low correlation with their core portfolio, whatever it is called.

To illustrate this idea, take the portfolio on the left in Figure 11. The sources of returns in this portfolio can be attributed to betas (from equities, bonds, commodities, etc.) and alpha, or anything independent of beta. The introduction of hedge fund betas adds a new building block to the portfolio, as shown on the right in Figure 11.

These three building blocks have implications for portfolios. Most observers agree with Asness (2004) that true alpha – that elusive, scarce, perhaps capacity-constrained component of excess return that is truly due to skill – deserves the highest fees; traditional betas deserve only index-fund fees; and alternative beta deserves something between the two. Hedge fund beta is not alpha in the sense of unique insight. However, to the extent an investor has little exposure to this return source, it behaves as alpha. The key is that hedge fund beta should not be bought for alpha prices.

### 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. Currently, 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.

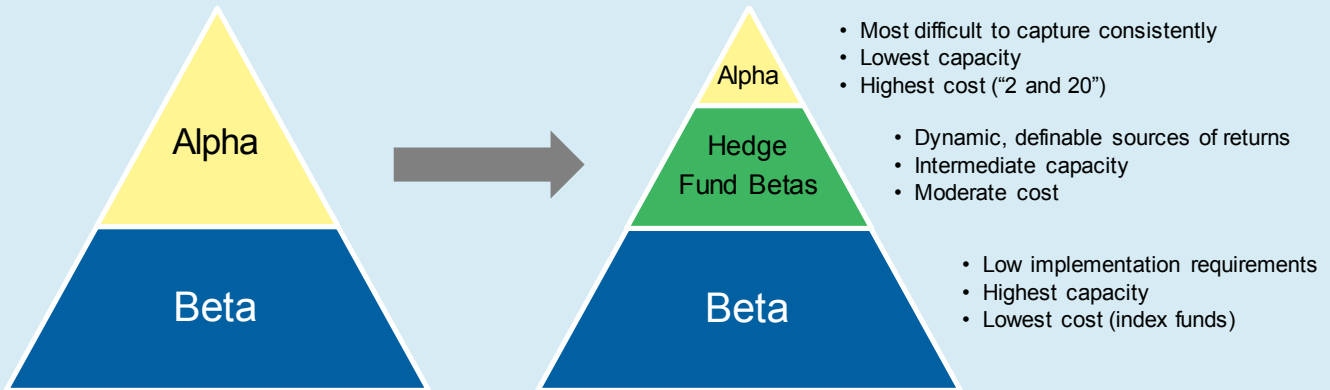
We expect most investors in hedge fund betas will hire managers to make these direct investments on their behalf, just as they do for traditional betas. Creating hedge fund betas, as noted above, requires skill in both definition (rules for inclusion, sizing and rebalancing of securities) and implementation (trading, financing, and 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

**Figure 11: Better Building Blocks for Portfolios**

Hedge fund betas may offer a more reliable, implementable and cost-effective way to capture returns previously considered “alpha”



Source: AQR. For illustrative purposes only.

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 “alpha seeking” 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

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 that were previously unknown or difficult to implement. In addition, the new betas become part of the process of portfolio construction and risk management. For example, 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 hedge funds, by helping investors understand how much of any 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 familiarity to open the door to larger hedge fund allocations over time, which may be a diversifying source of returns. 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, and have been receiving increasing practitioner and academic attention.<sup>18</sup> We believe at the end of the day, hedge fund betas will allow investors to manage portfolios that are better diversified, more efficient, and, therefore more likely to achieve their long-term net return targets.

As a final point, a lot of the “alpha versus beta” debate is a philosophical discussion that can get bogged down in semantics. Practically speaking, if you’re an investor who has no exposure to hedge fund betas, it is all alpha to you!

<sup>18</sup> See Harvard Business School’s Case Study “AQR’s DELTA Strategy” (Parts A and B) for a review of a hedge fund beta portfolio.

### References

- Agarwal, V., and N. Naik, 2000. "Generalized Style Analysis of Hedge Funds." Journal of Asset Management 10: 93-109.
- Anson, Mark, 2008. "The Beta Continuum: From Classic Beta to Bulk Beta." Journal of Portfolio Management, Winter.
- Asness, Cliff, 2004. "An Alternative Future. An Exploration of the Role of Hedge Funds." Journal of Portfolio Management 30th Anniversary Issue.
- Asness, Cliff; Antti Ilmanen, 2012. "The 5 Percent Solution." Institutional Investor.
- Asness, Cliff, Robert Krail and John Liew, 2001. "Do Hedge Funds Hedge?" Journal of Portfolio Management, Fall, Journal of Portfolio Management Best Paper Award.
- Bergstresser, Daniel; Lauren Cohen, Randolph Cohen, and Christopher Malloy, 2011. "AQR's DELTA Strategy" (parts A and B). Harvard Business School Case Study.
- Cochrane, John, 2007. "Efficient Markets Today." Conference on Chicago Economics, Chicago, Illinois. 10 November.
- Dunn, Thomas, 2005. "Hedge Fund Investing – A Taxonomy of Alpha." ABP Investments US, Inc.
- Fama, Eugene F., and Kenneth R. French, 1993. "Common Risk Factors in the Returns on Stocks and Bonds." Journal of Financial Economics 53: 427-465.
- Fung, William, and David Hsieh, 1997. "Empirical Characteristics of Dynamic Trading Strategies: the Case of Hedge Funds." Review of Financial Studies 10: 275-302.
- Fung, William, and David Hsieh, 2004. "Hedge Fund Benchmarks: A Risk-Based Approach." Financial Analysts Journal 60: 65-80.
- Hasanhodzic, J., and A. Lo, 2007. "Can Hedge-Fund Returns Be Replicated?: The Linear Case." Journal of Investment Management 5: 5-45.
- Hasanhodzic, J., and A. Lo, 2006. "Attack of the Clones." Alpha June: 54-63.
- Hill, J., B. Mueller, and V. Balasubramanian, 2004. The 'Secret Sauce' of Hedge Fund Investing/Trading Risk Dynamically. Goldman Sachs Equity Derivatives Strategy. 2 November.
- Ilmanen, Antti; Ronen Israel, 2012 (forthcoming). "What Is Alpha?". AQR Paper.
- Main, George, G. Thouret, and R. Carroll, 2007. Two Paths to Alternative Beta. Diversified Global Asset Management. October.
- Mitchell, Mark, Lasse H. Pedersen, and Todd Pulvino, 2007. "Slow Moving Capital." The American Economic Review 97: 215-220.
- Mitchell, Mark, and Todd Pulvino, 2001. "Characteristics of Risk and Return in Risk Arbitrage." Journal of Finance 56: 2135-2175.
- Roll, Richard, 2003. "Style Return Differentials: Illusions, Risk Premiums, or Investment Opportunities?" The Handbook of Equity Style Management. Ed. T. Daniel Coggin and Frank J. Fabozzi. Hoboken, New Jersey: John Wiley & Sons, Inc. 229-258.

### Disclosures

The views and opinions expressed herein are those of the author and do not necessarily reflect the views of AQR Capital Management, LLC its affiliates, or its employees.

The information set forth herein has been obtained or derived from sources believed by author to be reliable. However, the author does not make any representation or warranty, express or implied, as to the information's accuracy or completeness, nor does the author recommend that the attached information serve as the basis of any investment decision. This document has been provided to you solely for information purposes and does not constitute an offer or solicitation of an offer, or any advice or recommendation, to purchase any securities or other financial instruments, and may not be construed as such. This document is intended exclusively for the use of the person to whom it has been delivered by the author, and it is not to be reproduced or redistributed to any other person. **Past performance is not an indication of future performance.**

Hypothetical performance results (e.g., quantitative backtests) have many inherent limitations, some of which, but not all, are described herein. No representation is being made that any fund or account will or is likely to achieve profits or losses similar to those shown herein. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently realized by any particular trading program. One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. For example, the ability to withstand losses or adhere to a particular trading program in spite of trading losses are material points which can adversely affect actual trading results. The hypothetical performance results contained herein represent the application of the quantitative models as currently in effect on the date first written above and there can be no assurance that the models will remain the same in the future or that an application of the current models in the future will produce similar results because the relevant market and economic conditions that prevailed during the hypothetical performance period will not necessarily recur. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the preparation of hypothetical performance results, all of which can adversely affect actual trading results. Hypothetical performance results are presented for illustrative purposes only.

There is a risk of substantial loss associated with trading commodities, futures, options, derivatives and other financial instruments. Before trading, investors should carefully consider their financial position and risk tolerance to determine if the proposed trading style is appropriate. Investors should realize that when trading futures, commodities, options, derivatives and other financial instruments one could lose the full balance of their account. It is also possible to lose more than the initial deposit when trading derivatives or using leverage. All funds committed to such a trading strategy should be purely risk capital.

Diversification does not eliminate the risk of experiencing investment losses.