Alpha/Beta Separation
Getting What You Pay For

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All investment returns can be seen as the culmination of the market return (beta) and excess returns (alpha). The rise of index funds has shown that achieving beta market exposure is inexpensive and easily achievable through index mutual funds and exchange-traded funds (ETFs).

Institutional investors have recognized that to maximize returns, minimize costs, and manage risks, manager performance (alpha) can be separated from beta using straightforward tools and analytical techniques. The academic rigor associated with this process has helped uncover an entire new set of asset classes: alternative beta.

Alternative beta and alpha separation have proven to be tremendous tools in the hands of the world’s largest institutions, but implementing these strategies on a smaller scale presents substantial analytical and implementation challenges. The rise of synthetic hedge fund products and low-cost ETFs has made the fine-tuning of portfolio exposure through these two techniques easier than ever before, and accessible to a broad range of investors.

Understanding Returns: Alpha vs. Beta

There are moments in history when the science of investing takes a major step forward. The birth of the capital asset pricing model was one of them; the dawn of index funds was another.

Today, another investing revolution is afoot: alpha/beta separation. No matter what’s in your portfolio, it can be described in certain universal ways, such as risk and reward. Perhaps the most critical of these concepts is that of alpha and beta. Simply put, beta is the risk/reward of your portfolio that is explained just by being in a particular market. Alpha is excess return—that elusive edge that lets you (or your investment manager) beat the market.

For most investors, alpha and beta are inseparable. When you buy an active mutual fund, for instance, you’re buying a lot of beta and a little bit of alpha.

But the most sophisticated investors now are decoupling the two, separating their decisions about alpha from their decisions about beta. This new investing technique allows investors to gain increased control over their asset allocation strategies, control costs and—most importantly—maximize returns.

Beta: The Market

For many investors, the most important investment decision they will ever make is simply to invest in the market. Study after study shows that our most basic asset allocation decisions determine the bulk of our portfolios’ returns. We may spend countless hours reading Barron’s, trying to figure out how to beat the market. But the most important thing from a returns perspective is making sure that we are in the market—getting market-level returns for market-level risks, preferably at low cost.

Fortunately, market returns—aka beta—are both widely available and wonderfully cheap. Mass-market retail products such as index mutual funds and ETFs reliably deliver market returns in many traditional asset classes at extremely low costs. State Street Global Advisors’ S&P 500 SPDR ETF (AMEX: SPY), for example, trades millions of shares a day, has a net expense ratio just shy of 0.10 percent, and has exhibited virtually no tracking error to its underlying index. Not a bad deal.

Derivatives offer another efficient tool for accessing index-level returns. Both futures and options allow investors to gain exposure to most of the world’s markets with minimal cost and tremendous flexibility.

As we’ll explain, new index-based investment products are even opening up alternative asset categories, such as hedge funds, to beta approaches.

Regardless of the structure or asset class, however, all of these index-based vehicles have one thing in common: They provide pure beta. In other words, their risks and returns can be explained nearly entirely by the movement of the market that they track. These index-based strategies provide investors with great ways to “buy the market” at low cost and with enhanced liquidity.

Alpha: The Elusive Goal

What about “beating the market?”

For most of the history of investing, the role of the advisor, investment manager, or consultant has been to do better than the market. In the simplest terms, that’s alpha: the portion of a portfolio’s return that is the result of a manager’s skill and not the return of the market.

Taken this way, determining a portfolio’s returns is simple:

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\text{TOTAL REAL RETURN} = \text{ALPHA} + \text{BETA} - \text{COSTS}
\]

The problem, of course, is that while beta has become easier and cheaper to acquire, alpha remains elusive and expensive (see figure 1). The efficient market hypothesis (EMH) tells us that
the market is, over the long term, efficient: Any one manager’s gain is another’s loss, and on average, the market price is the “right” price. One can debate whether the EMH is valid over shorter intervals, but academic research consistently shows the overall efficiency of the market over the long run.

There are managers who beat the market, of course, but they charge for their services. The standard fee for a hedge fund, for instance, is 2 percent of assets under management and 20 percent of any profits. The most successful hedge fund managers charge even more than that.

**Alpha Pollution**

It’s fine to pay a high price for true excess returns; after all, alpha is hard to find. The problem is that investors aren’t always sure what they’re paying for.

Alpha always must be explained relative to some benchmark, and defining that benchmark properly is critical. Suppose that an investment manager chooses the S&P 500 as its benchmark but holds a portfolio with a default position of 50-percent Treasuries and 50-percent stocks. If the stock market falls, that manager will outperform, because the steady fixed-income position will offset the falling stock prices. But has the manager really captured alpha? Not really. The default portfolio simply captured a different market than the index. If investors paid alpha-level fees for this static 50-percent bond/50-percent stock portfolio, they were misled. They could have achieved the same exposure for less.

Every investment decision has an implication in alpha and beta terms. The decision to invest in a passive index also is a decision to abandon any attempt at gaining alpha. Investing with an active manager is a decision to pay a premium for a blend of alpha and beta. An active mutual fund, for example, is going to produce returns that are the culmination not only of that manager’s skill, but also of the underlying market itself. In both cases, total return is degraded by the costs of implementing the strategies in question. Worse, you’re paying active-management-level fees for the entire portfolio, not just the portion of the portfolio actually generating alpha.

This blending has a significant impact on overall portfolio performance. Miller (2005) suggested that the bulk of returns offered by traditional equity mutual funds were beta returns. Even the best actively managed funds, it turned out, could be explained largely by their exposure to major market indexes. If you adjusted the funds’ returns to isolate just the alpha, and replaced the beta exposure with hypothetical low-cost index funds, the implied investment management fee for the alpha portion was actually more than 7 percent per year. Expensive alpha indeed.

The first goal of alpha/beta separation is to understand exactly what you’re buying and exactly what you’re paying for it. That way, you can make sure you aren’t paying alpha-level fees for beta-level results.

**Can Alpha/Beta Separation Be Applied to Other Fields?**

Perhaps the most problematic issue with alpha/beta separation is definitional. What precisely is alpha? How do you know that the risk/return pattern from a particular manager in fact is unique and idiosyncratic, and not simply part of the systematic risk/return of its investment universe? Many in academic finance challenge whether true alpha even exists over any meaningful investment horizon—whether essentially all investment performance is explained over time as short-term beta, driven by changes in market exposure.

The problem is fundamentally one of defining what the beta should be for a particular manager’s strategy. For example, if a manager claims his benchmark is the S&P 500, it would be convenient to simply call the S&P 500 Index return his beta, and consider everything else alpha. But if in fact that manager is consistently selecting from, say, the Russell 3000, then extracting the appropriate market benchmark is problematic.

Fortunately, a better, more consistent way to measure beta has emerged. In academic terms, beta is the relationship between the returns from an investment and the risk associated with those returns. More-risky assets should have an associated risk premium—the likelihood of higher returns. Any given universe of investments, then, can be seen to have its own beta, and true manager skill should be assessed only once that beta is understood.

The issue of beta definition becomes more complex the more arcane or opaque the investment strategy. Many hedge funds are essentially black boxes, where what goes on in the day-to-day management is unknown by the public, and holdings and performance are reported infrequently. But hedge funds have been able to charge substantial fees to deliver returns that apparently have been unavailable elsewhere.
And yet the strategies many hedge funds pursue—market-neutral and short-extension strategies—actually are using the tools of alpha/beta separation.

Are these funds truly delivering alpha? These are muddy waters, and ones that academic finance continues to debate. But one thing is clear: What many have considered alpha in the past may in fact just be another form of beta—alternative beta. Alternative beta still is the result of systemic risks; it’s just a different set of systemic risks than those commonly experienced in the stock and bond markets. This alternative beta can be captured using advanced investment strategies, such as hedge fund replication, for a fraction of what most investors pay for supposed alpha.

Hedge Fund Replication

This exploration of alternative beta underlies a new breed of investment strategies: synthetic hedge fund products. Hedge funds—a simple name for a range of private investment funds that may or may not use hedging or any other particular strategy—have been used for decades by institutional investors seeking diversification from the traditional asset classes such as stocks and bonds, or seeking strategies typically unavailable in other forms, such as leverage and shorting. Some of the most successful investors in the world—such as the Harvard and Yale endowments—make sizable allocations to hedge funds and other alternative investments because they are able to deliver steady returns that are not correlated to other asset classes. In fact, the most sophisticated investors diversify their alternatives exposure across multiple strategies and platforms to take advantage of the favorable risk/return trade-offs. In 2007, the Yale University Endowment allocated more than 23 percent of its assets to absolute-return strategies, and more than 69 percent of its portfolio to alternative investments as it sought out steadier returns during a period of market turmoil.

But even the most complicated hedge fund still can be understood both in terms of its core market exposure (the real beta of the strategy) and the manager’s skill (the alpha, positive or negative).

One way of teasing out the real beta of the hedge fund market is to look into a very shiny rearview mirror. In many cases, hedge fund strategies can be successfully replicated using easily tradable asset classes. Quantitative analysis can identify the factor bets made by a given hedge fund strategy, and investors then can produce similar returns and risk profiles using a synthetic approach involving options, ETFs, or other related instruments. These synthetic hedge fund indexes then can be considered the true beta for a particular hedge fund strategy and the manager’s deviation from that beta will be determined by his skill.

This continues the primary trend of alpha/beta separation. Investors are able to access what they were seeking all along from hedge funds: alternative beta, or the low-correlation returns that can boost overall performance. And they can do so without paying for something that may not have existed in the first place: alpha.

Implementation: Controlling Costs, Improving Returns

How do you implement this understanding of alpha and beta into a portfolio?

The most common portfolio strategy for institutions and high-net-worth investors is one that blends both traditional active management and the benefits of indexing.

Let’s take the example of a large pension fund. Let’s suppose that the investment manager sets the overall target asset allocation for the fund across four different asset classes: U.S. equities, international equities, bonds, and alternative assets (hedge funds, commodities, private equity, etc.). Inside each asset class, it employs a core-and-satellite approach. First, it selects the core managers—passive managers that provide pure beta exposure at extremely low costs that make up the bulk of the pension fund’s returns.

Then it takes a portion of its assets and applies them to specific managers who it believes have the potential for excess returns; perhaps a large-cap manager, or a hedge fund with a good track record in long/short strategies.

In each case, the decision about each manager is made in the context of the markets in which it invests and the appropriate benchmark. The large-cap manager isn’t hired simply because he’s a good stock-picker. He’s hired because he’s a good large-cap stock-picker. The benefit of this approach is that the core portfolio can be left relatively stable, subject to occasional rebalancing and renegotiation. The downside is that the universe of potential alpha managers is limited, and each alpha manager is being paid to produce both alpha and beta.

In an alpha/beta separation strategy, these decisions about asset allocation and manager selection are decoupled. Fundamental asset allocation decisions are made using pure, core vehicles, but the alpha managers are selected purely for their skill. These alpha managers are evaluated based on the risk and return only of their active management, without regard to what they invest in, be it fine wines, small-cap stocks, or Liberian bonds (see figure 2).

The core asset allocation decisions are implemented entirely with passive vehicles. Managers who are believed to have the potential for pure alpha then are layered on top of this core portfolio, without affecting the core asset allocation strategy.

In theory, such a methodology has significant appeal: Cost control. In an alpha/beta separation strategy, a larger percentage of overall portfolio assets are in beta-centric, passive investment vehicles. Regardless of whether these vehicles are ETFs, separate accounts, or derivatives, these passive vehicles generally carry low management fees.
and/or minimal transaction costs. If those dollars were with an active manager, the investor would be incurring active management fees—almost certainly higher. In the Swedish pension system, for example, the costs of switching managers was reduced from 100 basis points, on average, to 5 basis points (Engstrom et al. 2008).

**Reduced tracking error.** Because beta generation now is segregated, investors can be selective in their choice of investment managers. For the largest institutional investors, this means having increased power when negotiating with index managers or swap counterparties.

**Flexibility.** Because the core asset allocation now is handled with low-cost, highly liquid passive vehicles, shifts in asset allocation can cause minimal friction. This means that portfolio rebalancing, adjusting for a change in risk profile, tax management, or even termination of one manager in favor of another can be done quickly and easily.

**Better beta.** By segregating the beta decision from manager selection, investors can cleanly analyze their expected portfolio returns. This makes finding uncorrelated asset classes more straightforward, because the “noise” of active management returns is removed from the analysis.

**Better alpha.** By selecting alpha managers solely on their ability to generate alpha within certain risk parameters, investors have a wider net to cast by looking at any and every asset class, including asset classes that are highly illiquid (which is where alpha is most likely to be found). In the ideal case, the returns of the alpha manager are entirely uncorrelated with any of the other asset classes in the portfolio—yet another boon to the asset allocation process.

**Alternative beta.** The combination of alpha/beta separation and modern investment techniques yields a new asset class: alternative beta—the low-correlated beta returns available in alternative asset classes such as hedge funds. Alternative betas can be captured in synthetic hedge fund products without the high costs traditionally associated with hedge fund strategies. Since the single biggest impact on portfolio returns is asset allocation, the ability to create an uncorrelated asset class—alternative beta—is tremendously powerful.

These factors combine to create a compelling case. The combination of lower costs, more-predictable outcomes, and increased flexibility would seem to be a sure winner. But despite these theoretical advantages, the alpha/beta separation portfolio has unique caveats.

First and foremost, managing a complete alpha/beta separation portfolio is not for the casual investor. The combined portfolio can be complex, and it requires attention and analysis. While any asset allocation strategy needs fine-tuning, when alpha is essentially an asset class in itself, paying attention to correlation and absolute performance becomes critical.

But perhaps more importantly, finding alpha managers is nontrivial. Very few managers consistently beat their benchmarks. Indeed, many in academic finance believe that in most markets alpha-seeking is a zero-sum game, where, by definition, every active manager’s win is another’s loss. Indeed, even the very definitions of alpha and beta undergo continuous academic debate.

Despite the debate, alpha/beta separation is far more than academic. The world’s largest and most-sophisticated
institutional investors are adopting the approach. In August 2008, the Massachusetts Pension Reserves Investment Management Board announced that it was firing its active managers and shifting its $50-billion portfolio toward an index/portable alpha structure (Appell 2008). In 2005, the Swedish pension system transitioned $14 billion to a strict alpha/beta separation system. The Swedes now credit the shift with reducing costs and increasing true uncorrelated alpha in its portfolio (Engstrom et al. 2008), and since have shifted an additional $32 billion to the strategy.

Implementation Challenges
Imagine you are a financial advisor running a modest separate account for a high-net-worth individual—around $1 million in assets. After a thorough analysis of the investor’s other holdings, her risk tolerance, and her financial situation, you construct a diversified portfolio using ETFs and low-cost mutual funds with a blended expense ratio of less than 30 basis points (0.30 percent). You’ve even used a hedge fund replication product to add additional low-correlated returns to the portfolio. If you’ve done your job, your asset allocation and selection of beta vehicles will generate solid results.

But your client isn’t satisfied. She wants to beat the market. She wants alpha. How do you go about getting it? After careful due diligence, you stumble across a mutual fund from manager ABC.

Manager ABC has a consistently outperforming large-cap strategy, making effective and profitable tilt-and-timing decisions. If you were to add this fund to the client’s portfolio, it would increase the asset allocation to large-cap stocks and create rebalancing challenges at the end of the month. What do you do?

The answer is to separate the alpha from the beta. You balance your client’s mutual fund investment in ABC with a corresponding short position in the S&P 500. Theoretically, you’ve now created pure, uncorrelated alpha from ABC and can manage your equity exposure independent of your analysis of the mutual fund’s performance (see figure 3). While simplistic and hypothetical, the example is useful for several reasons. Long/short and market-neutral equity strategies were the first to offer this kind of pure alpha to investors, and are among the easiest to implement. But several things are working against our hypothetical advisor:

Hedging isn’t free. Whether implemented through shorting equities, swaps, futures, or options, financing and transaction costs degrade the separated alpha. In many markets, successful active management is measured in basis points. Separation only makes sense when the cost of stripping out the beta is substantially less than the expected alpha of the manager.

Aligning execution and liquidity is critical. To put on or unwind an alpha separation strategy, multiple transactions in different markets must be made. Swaps, equities, and futures all have different settlement and cash management requirements that need to be monitored and managed.

For these reasons and others, many investors do not construct pure-alpha exposure on their own or even through a managed separate account. Instead they rely on asset managers to either package their own expertise in pure-alpha form or fund-of-funds managers who seek to collect high-alpha managers and package their returns in a portable format.

Packaged approaches are fine, as long as the underlying principle remains clear: Pay alpha fees only for true-alpha returns. And don’t think you have to pay alpha fees for all asset classes, because even alternative asset classes can be captured using alternative beta.

Conclusion
In many ways, the history of modern investment management is punctuated by two fundamental revolutions: the creation of the first mutual funds in the 1930s and 1940s, and the creation of the first index funds in the 1970s. In each case there was a tremendous democratization of the investment landscape. Broader segments of the population gained both the access and the expertise to become effective investors at lower costs.

The separation of alpha and beta is the next revolution in investment science. Investment strategies that effectively isolate beta are tremendously powerful in managing risk and containing costs. Those that segregate true alpha can provide investors with unique, uncorrelated sources of return.

But perhaps most important, the academic rigor of analyzing the real sources of investment return is uncovering hidden beta—alternative beta. Once identified and synthesized, these alternative betas can themselves be indexed and turned into

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investable products such as hedge fund replication funds, giving investors access to entire asset classes that previously were inaccessible.

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Endnote

1 According to the 2007 Yale Annual Report, the Yale Endowment allocated 23.3 percent of its portfolio to absolute return strategies, 18.7 percent to private equity, and 27.1 percent to real assets, representing a 69.1 percent allocation to alternative strategies.

References

