

# Alpha/Beta Separation

## Getting What You Pay For



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## Abstract

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 in order to maximize the returns, minimize costs and manage the risks of their portfolios, 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 have 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 Assets Pricing Model (CAPM) 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, like 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 are now 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.

Let's look at the constituent parts.

## 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 exchange-traded funds

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% 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, like 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:

$$\begin{array}{r} \text{ALPHA} \\ + \text{ BETA} \\ - \text{ COSTS} \\ \hline \text{TOTAL REAL RETURN} \end{array}$$

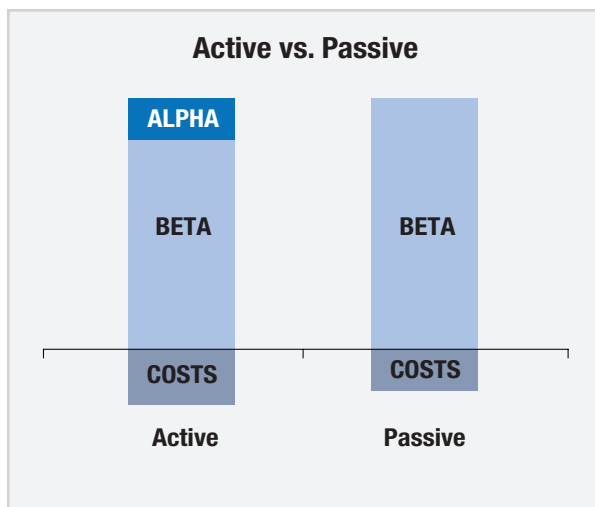


Figure 1

The problem, of course, is that while Beta has become easier and cheaper to acquire than ever before, Alpha remains elusive and expensive. 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% of assets under management and 20% 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, investors aren't always sure what they're paying for.**

Alpha must always 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 whose

default position is 50% Treasuries and 50% stocks. If the stock market falls, that manager will outperform, as the steady fixed-income position will offset the falling stock prices. But has the manager really captured Alpha? Not really. Its default portfolio simply captured a different market than the index. If investors paid Alpha-level fees for this static 50% bond/50% 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 is also 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. A study in 2005 [Miller] suggested that the vast 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% 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 is in fact 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 only be assessed 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 have been apparently unavailable elsewhere. And yet the strategies

many hedge funds pursue—market-neutral and short-extension strategies—are actually using the tools of Alpha/Beta separation themselves.

### 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 is still 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 like stocks and bonds, or seeking strategies typically unavailable in other forms, like 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 over 23% of its assets to Absolute Return strategies, and over 69% of their portfolio was allocated to Alternative Investments,\* as it sought out steadier returns during a period of market turmoil.

But even the most complicated hedge fund can still 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 then produce similar returns and risk profiles using a synthetic approach involving options, exchange-traded funds or other related instruments. These synthetic hedge fund indexes can then 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 the hedge fund market: Alternative Beta, or the low-correlation returns that can boost the performance of the portfolio overall. And they can do so without paying for something that may not really have existed in the first place: Alpha.**

\*According to the 2007 Yale Annual Report, the Endowment had allocated 23.3% of its portfolio to Absolute Return Strategies, 18.7% to Private Equity and 27.1% to Real Assets, representing a 69.1% allocation to Alternative Strategies.

# 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 has 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 its 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 (Figure 2).

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

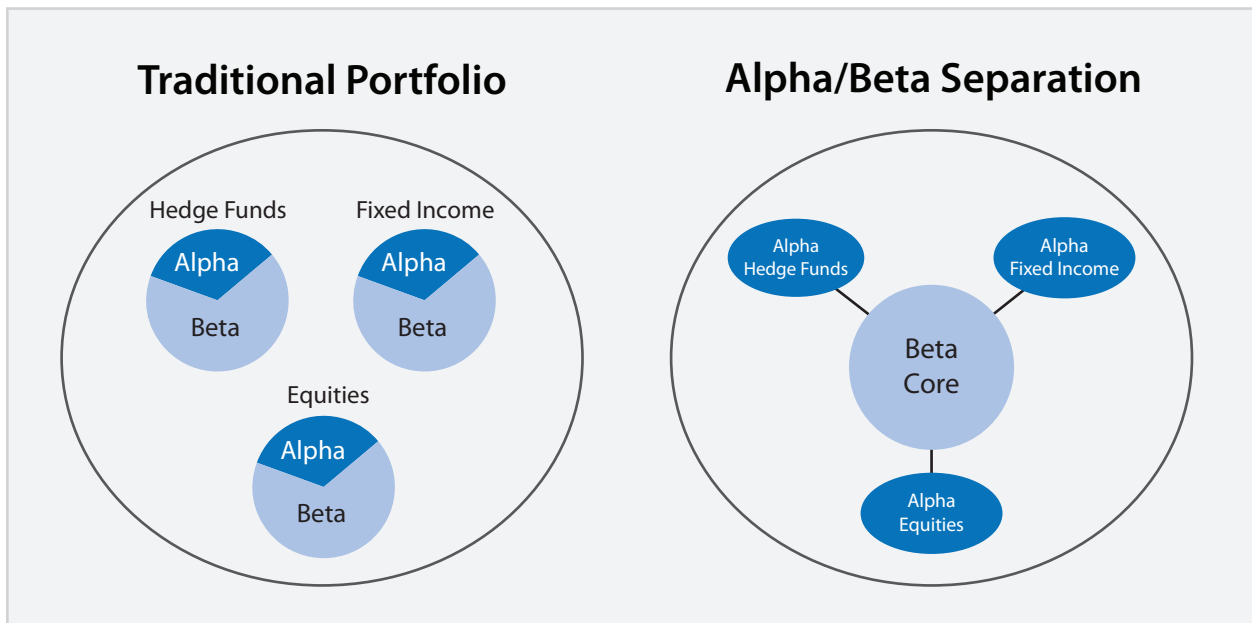


Figure 2

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].

**Reduced Tracking Error.** Because Beta generation is now entirely segregated, investors can be extremely selective in their choice of investment managers. For the largest institutional investors, this means having increased buying power when negotiating with index managers or swap counterparties.

**Flexibility.** Because the core asset allocation is now handled entirely with low-cost, highly liquid passive vehicles, shifts in asset allocation can be achieved with minimal friction. This means that portfolio rebalancing, adjusting for a change in risk profile, tax management or even the 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 more cleanly analyze their expected portfolio returns. This makes finding uncorrelated asset classes more straightforward, as 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, 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 an entirely new asset class: Alternative Beta—the low correlated Beta returns available in alternative asset classes like hedge funds. These 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 requires attention and analyses. 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, there are many in academic finance who 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 of 2008, the Massachusetts Pension Reserves Investment Management Board announced that they were firing their active managers and shifting their \$50 billion portfolio toward an index/portable alpha structure [Appell]. In 2005, the Swedish pension system transitioned \$14 billion to a strict Alpha/Beta separation system, and credits the shift with reducing costs and increasing true uncorrelated alpha in its portfolio [Engstrom], and has since 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 under 30 basis points (0.30%). You've even used a hedge fund replication product to add in 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 (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 there are several things working against our hypothetical advisor:

**Hedging isn't free.** Whether implemented through shorting equities, swaps, futures or options, there are financing and transaction costs that 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 on 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, since even alternative asset classes can be captured using Alternative Beta.**

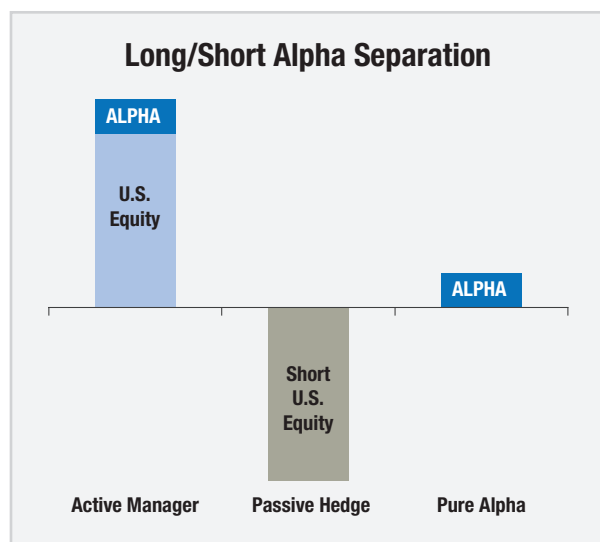


Figure 3

## 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 and broader segments of the population gained both the access and the expertise to become effective investors, at lower costs than ever before.

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 unique, uncorrelated sources of return.

**But perhaps most important, the academic rigor of analyzing the real sources of investment return are uncovering hidden Beta—Alternative Beta. Once identified and synthesized, these Alternative Betas can themselves be indexed and turned into investable products such as hedge fund replication funds, giving investors access to entire asset classes that were previously inaccessible.**

## Definitions

**Alpha** is a measure of a portfolio's actual excess returns and expected performance, given its level of risk (as measured by Beta).

**Beta** reflects the sensitivity of a portfolio's return to fluctuations in a particular market (in this case, as measured by the S&P500® Index).

**Volatility** is a measure of the range of a portfolio's performance, meaning the degree to which it rises above and falls below its average return.

**Return/Volatility** is a portfolio's annualized 5-year return divided by its annualized 5-year standard deviation.

**Sharpe Ratio** is a measure of a portfolio's risk-adjusted performance (return per unit of risk).

**Correlation** is a measure of the relationship between two variables (e.g., portfolio returns and the S&P 500® Index).

**Up/Down Capture** is a measure of a portfolio's performance in up/down markets relative to a benchmark index (in this case, the S&P 500® Index).

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## About IndexIQ

IndexIQ is the leading developer of index-based alternative investment solutions that combine the benefits of traditional index investing with the risk-adjusted return potential sought by the best active managers. The company's philosophy is to democratize investment management by making institutional class investment strategies available to all investors in low-cost, liquid, transparent and tax-efficient products. IndexIQ strategies are marketed through the company's proprietary investment products and select partnerships with leading global financial institutions. Additional information about the company and its products can be found at [www.indexiq.com](http://www.indexiq.com).

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# Author Biographies

## **Professor Robert F. Whitelaw, Ph.D. Chief Investment Strategist**

Robert Whitelaw is the Edward C. Johnson 3d Professor of Entrepreneurial Finance and Chairman of the Finance Department at the Leonard N. Stern School of Business, New York University. He has a Ph.D. in Finance from Stanford University, Graduate School of Business, and a B.S. in Mathematics from MIT. Professor Whitelaw teaches corporate and managerial finance in the M.B.A. and undergraduate programs. He also teaches fixed-income securities, equity investments, derivatives and risk management at the executive level, and asset pricing at the doctoral level.

Dr. Whitelaw's research interests include the relation between risk and return in the stock and bond markets, the pricing and hedging of fixed-income derivative securities, risk measurement and management, and market efficiency. His papers have been published in academic journals such as the *Journal of Finance*, the *Journal of Financial Economics* and the *Review of Financial Studies*, as well as practitioner journals such as the *Journal of Derivatives*, the *Journal of Fixed Income*, and *Risk*. In addition, he is a research associate at the National Bureau of Economic Research (NBER), Program on Asset Pricing and a past associate editor of the *Review of Financial Studies* and the *Journal of Finance*.

Dr. Whitelaw's work experience includes two years spent in the Public Finance Department at Shearson Lehman, where he was involved in structuring tax-exempt bond financings. He also provides consulting services to corporations and financial institutions, specializing in pricing and hedging complex securities, risk management and equity trading.

## **Salvatore J. Bruno Senior Vice President, Head of Research and Product Development**

Sal joined IndexIQ from Deutsche Asset Management (DeAM), where he held a number of senior positions. Most recently, Sal was a Director and Portfolio Manager for a U.S. large-cap core equity mutual fund with approximately \$6 billion in assets under management. The fund's strategy combined traditional fundamental equity research with a multifactor quantitative model in a disciplined, risk-managed process.

Prior to becoming Portfolio Manager, Sal was the Head of Advanced Quantitative Research at DeAM. In this role, he directed the quantitative research effort to support numerous products including quantitative equity strategies, global asset allocation, passive risk-based alternative beta portfolios, and probabilistic efficient frontiers. He also co-developed the strategy to combine fundamental and quantitative research into a single portfolio. This strategy became widely used to manage several equity strategies within DeAM, including the mutual fund for which Sal would subsequently become a portfolio manager.

As the Global Head of Active Equity Quantitative Strategies for DeAM, Sal managed a team of 13 analysts around the world. The team provided quantitative tools and support for the Active Equity fundamental portfolio managers and research analysts on a variety of topics including quantitative equity models, portfolio construction, risk management, and performance measurement and analysis.

Sal earned a Bachelor of Science degree in Applied Economics & Business Management from Cornell University and an M.B.A. in Finance & Economics from New York University Leonard N. Stern School of Business. He is a member of the NYSSA and the CFA Institute.

## **Anthony B. Davidow, CIMA Executive Vice President, Head of Distribution**

Tony joined IndexIQ from Morgan Stanley where he was a Managing Director and Director of Sales and Training for Morgan Stanley's Consulting Services Group. He helped build Morgan Stanley's \$140 billion Consulting Services Group Business. Tony was responsible for delivering solutions across the market segments – Institutional, Private Clients and Retail. He joined Morgan Stanley in 1995, and originally was responsible for Morgan Stanley's Institutional Consulting Services business. He was later the Director of Business Development for Graystone Wealth Management Services, and a member of the firm's Client Strategy Group.

Prior to joining Morgan Stanley, Tony spent five years in Kidder Peabody's Asset Management business, where he was responsible for their NOVA Consulting business and Director of the Portfolio Services Group. He also spent time as Analyst on the American Stock Exchange, Inc. Tony began his career 25 years ago working for a family office.

Tony is a graduate of Bernard Baruch University, with a BBA in Finance and Investments. Tony received his Certified Investment Management Analyst (CIMA) designation from the Investment Management Consultants Association and the Wharton School of the University of Pennsylvania. Tony currently serves on the IMCA Board of Directors, and serves as the Board Liaison to the National Conference Committee. He is a member of the International Who's Who of Professionals. Tony is a frequent industry speaker on the institutional and high net worth marketplace, as well as the author of several white papers on investment trends and opportunities.

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