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The Rise of Indices Is Changing the Face of Investing

EXECUTIVE SUMMARY

A confluence of factors including technology, regulation, investor skepticism of manager skill, and fee-consciousness, has favored the rise of index investing. The pace of growth and complexity of change make it difficult for investors and managers to stay informed about these critical trends. In this report, we provide an overview of the rise of indexing, as well as its impact, both realized and potential, on the asset management industry.

The first half of the paper outlines the key trends in indexing and fund management, specifically:

1. Fees are under pressure. Changes in technology and economies of scale have helped commoditize beta;
2. Product scope is continually broadening, with index-based investing making inroads into active management. Smart beta and the growing interest in hedge fund beta paves the way for further growth of passive index funds at the expense of active management; and
3. Technology advances allow for mass customization and an increased focus on outcomes. The outcomes required by individual and institutional market participants are becoming critical—index funds may benefit due to their low cost and heightened transparency.

The second section of our report focuses on the changes to the asset management industry and reviews the topics that are commonly discussed in the context of a highly indexed future:

1. Can passive investing grow too large? With large inflows into passive index funds, this is an oft-repeated question. We elaborate why this should not be a practical concern.
2. With returns being demystified and unbundled, what are the potential implications for active management? The breakdown of returns into factors has enabled investors to be much more discerning regarding what they may be willing to pay higher fees for. This may have significant implications for fee structure and the industry as a whole.
3. The changed definitions of beta and passive investing. Passive investing and beta have evolved considerably from their origins.

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PART I: AN ANALYSIS OF THE BROAD TRENDS

I) Fees Are Trending Downwards

Passively managed funds, including exchange-traded funds (ETFs) and index funds, have grown 73% over a six-year period, increasing from 11% of global assets under management (AUM) in 2009 to 19% in 2015.¹ Within this segment, ETFs have been growing at an annual growth rate of approximately 25% over the past decade, with AUM standing above USD 3 trillion.² Institutions too are increasingly using ETFs for core exposures and access to smart beta strategies. In a study by Greenwich Associates³, 36% of the institutional equity ETF users expected to increase ETF allocations in the year ahead, while that number was 35% for institutional bond ETF users.

Accompanying this growth has been a sharp fall in fees. Investing in the U.S. stock market through an index-based fund in 1976 would have cost an upfront fee of 6%⁴ as compared with just 0.05% for many index-based funds today. The downward trend in fees can be seen across active and passive funds, across geographies and across product categories – bonds, equities, target date and hybrid funds.⁵ The trend is much more pronounced in the case of index funds and ETFs. According to a report from Deloitte, actively managed funds in Europe charged 5% less in 2012 than they did in 2002, whereas that number was closer to 42% lower in the case of passive products.⁶ Investors have also simultaneously shown a strong preference for low fee funds with 95% of new flows going into funds in the lowest cost quintile over the past 10-year period, further reducing asset-weighted expense ratios.⁷

An important enabler for offering passive exposure with fees in the single bps has been the significant technological changes in the asset management industry. Improvements in computing, data storage, and processing power have created significant cost efficiencies across the value chain of product creation, execution, and fund distribution. Back in the 1970s, when Wells Fargo attempted to create an equal-weighted index using stocks listed on the New York Stock Exchange, the project was

ETFs have been growing at an annual growth rate of approximately 25% over the past decade.

¹ Source: Casey Quirk, 2015, *Global Investment Management Assets, Revenue, and Operating Margins Slump in 2015*.

² Source: ETFGI, 2015, *ETFGI Monthly Newsletter October 2015*, *ETFGI Press Release June 2015: Global*.

³ Source: Greenwich Associates, 2016, *Institutional Investment in ETFs: Q1 2016*.

⁴ Source: Woerth, John. "Why it's a great time to invest." *Vanguard Blog*. The Vanguard Group, Inc., 8 Jul. 2014, Web. 30 May 2016. When Vanguard introduced the first index mutual fund in 1976, the Vanguard 500 Index Fund had an expense ratio of 0.43% and a sales load of 5.67%.

⁵ Source: S&P Dow Jones Indices, 2015, *SPIVA®: A Cross-Country Comparison*; Investment Company Institute, 2015, *Investment Company Fact Book, 2015*.

⁶ Source: Deloitte, 2014, *Europe's fund expenses at a crossroads*.

⁷ Source: Morningstar, Rawson, Michael; Johnson, Ben, 2015, *Investors Drive Expense Ratios Down*.

On the distribution side, funds incur lower marketing costs than in the past due to modern channels and online platforms.

abandoned due to the difficulty of managing non-market-cap weighted indices—think dividend calculations, cash management, back-office functions, and trading performed without today’s technology. On the trading side, bid-ask spreads have also fallen dramatically over the past 20 years, with markets becoming electronic and more liquid. And a reason specific to ETFs is the innovative way their shares are created and redeemed. This process requires fewer intermediaries and trading thus reducing the administrative burden significantly. On the distribution side, funds incur lower marketing costs than in the past due to modern channels and online platforms. Technological changes are only increasing, and similar to every other industry, from travel to publishing, technology could create winners and losers in the asset management industry. Put in the context of increasing automation, just as robo-advisory is likely to be an important new player on the distribution side, indexing which is highly process driven, may continue to be one of the strongest beneficiaries on the product side.

Regulation has been favorable toward passive investing, with a strong push for greater transparency and big changes being made in how advisors and platforms are paid.

It is perhaps unsurprising that demand for low-fee products has increased, given their relevance in a low-return environment. With a reasonable assumption that the equity risk premium over a five-year period will be 4% annualized,⁸ a 1% active management cost would be 25% of the overall expected gain from equity investing. That margin would be even larger in the case of bonds, where expected returns are near zero. Low fees aside, there are other parts to the demand equation as well. Regulation has been favorable toward passive investing, with a strong push for greater cost transparency and big changes being made in how advisors and investment platforms are paid. In addition, disappointing active management results has driven investors to voting with their dollars in favor of low cost passive funds. Funds reap the benefits of scale⁹ as their AUMs increase, resulting in lower custodial fees, better IT systems, advanced risk management, collateral management, transaction cost savings through internal crossing networks, and spreading out the anticipated high regulatory burden.¹⁰ Funds that offer passive beta exposure especially benefit, as index calculation and passive tracking are areas where technology may be powerfully used to remodel a low margin business into a highly scaled, efficient enterprise. Exhibit 1 shows the strong relationship between lower fees and funds that have high AUM.

⁸ Source: Credit Suisse, 2016, *Global Investment Returns Yearbook 2016*.

⁹ Malkiel talks about the “substantial economies of scale” in asset management, where costs such as brokerage commissions, custodial fees, due diligence, and reporting are as expensive for a small provider as they are for a big one. Source: Malkiel, Burton, 2013, *Asset Management Fees and the Growth of Finance*.

¹⁰ The regulatory headwinds rising in the near future are likely to have substantial costs to asset managers, with an estimated increase in compliance costs of 3%. The paper notes that the cost pressure is the most acute on mid-sized traditional firms as the many drivers favor scale players and alternative managers. Source: Oliver Wyman, Morgan Stanley, 2016, *Wholesale Banks & Asset Managers, 2016*.

Exhibit 1: Scale Versus Fees		
AUM (USD Billions)	Management Fee (bps)	Number of ETFs
<1	50	1420
1	37	161
5	24	41
10	23	33
20	17	17
50	12	4

Source: S&P Dow Jones Indices. ETFs domiciled in U.S. Data as of April 2016. Table is provided for illustrative purposes.

As the margins from pure passive strategies approach zero, big firms might consider a “loss leader” approach to attract and retain AUM.

With increasing competition, passive strategies are expected to remain low cost. In particular, for traditional market-cap weighted index funds—the return of two funds covering the same market should be equivalent (by definition), resulting in beta being commoditized and fund managers left competing only for price. (To a lesser extent, this commoditization is taking place in factor investing as we see in the next section). Thus, the barrier to entry becomes the scale, and is no longer about the product. If a product has USD 100 million AUM and the cost of replicating the market for an additional USD 100,000 is modest, in order to maximize profit, the eventual price target should also trend toward a modest point.

Some firms might consider a “loss leader” approach to retain AUM. This pricing strategy could be to offer their core pure passive range at relatively low rates in order to retain their scale benefits and make their margin on smart beta or active products and other business lines, such as multi-asset solutions. Many investors also seek to complement their passive low-cost beta with active management using a core-satellite approach. Additionally, securities lending on a fund’s assets, even if a large proportion of it is returned to the fund, can be of significant magnitude for providers with scale. Blocher and Whaley show that ETFs can earn significant revenue from securities lending, on the order of the size of the ETF’s expense ratio.¹¹

II) “Passive” Is Eating Into Active

THE DEMYSTIFICATION OF INVESTING

Though the cost of investing in most market cap funds is decreasing, investors are still willing to pay higher fees for products that beat their benchmark. Indeed, the main goal of traditional long-only active management was to outperform cap-weighted market indices by picking certain stocks. However, research that began more than two decades ago

¹¹ Based on U.S.-domiciled ETFs. The paper finds that the revenue for passive index mutual funds is similar, though slightly less. While the value-weighted expense ratio of passive funds in their sample was 26 bps, ETFs could make 23 bps-28 bps per year from securities lending. They also show that, if firms are aggressive on their lending program, it could be as high as 55 bps-114 bps per year. Source: Blocher, Jesse; Whaley, Robert, 2015, *Passive Investing: The Role of Securities Lending*.

Sources of returns are being demystified and systematically captured in the form of indices.

shows that outperforming managers were generating excess returns through tilting toward certain sources of returns or risk premia. These systematic sources of returns exist due to behavioral anomalies, systematic risks, and structural inefficiencies in the market. As these systematic sources of returns (or factors) are both identified and quantified, they become more readily investable. The cost of accessing these factors also decreases; once the drivers are understood, they can be systematically harvested in a cost-effective, transparent, rules-based approach.

This demystification of investing is an ongoing process, where sources of returns are broken down through quantitative models and then commercialized through better technology. Technology and quantitative models are a powerful combination, as together they could potentially create investment strategies that are cheaper, reliable, with reduced human bias and greater economies of scale. Automation makes a large proportion of the human labor involved in tracking a passive index redundant, and, in much the same way, quantitative models attempt to do the same to the traditional judgement and decisional activity of an active manager.

As returns are broken down, alpha tends to shrink.

Portfolio returns were initially considered to be solely due to active manager skill and hence any return was treated as “alpha.” In 1963, the capital asset pricing model (CAPM) explained the cross-sectional differences of stock returns with only a single factor, the market beta and portfolio returns in excess of this were attributed to skill. Later, academic research began to identify other sources of return, with the most important being the Fama-French Three-Factor Model in 1993, which included market beta, value and size (and was later expanded to four factors adding momentum). There has been a steady evolution of research into the best measures to capture these factors, their performance in different cycles, and new models that offer compelling alternatives¹² to the four-factor model.

ALPHA IS CONTINUALLY SHRINKING

As returns are broken down further and further, alpha shrinks as it is the portion of a portfolio’s returns that is unexplained by exposure to systematic risks or betas. We have witnessed the continuous and ongoing process of alpha being recategorized as beta and consequently the portion of return attributed to manager skill reduced.

As interest in factors grows, there is likely to be a renaissance in demand for quantitative factor investing. This quantitative-based investing could look quite different from the active quant boom of 2004-2007, as much of the growth would be in the form of transparent “white-box,” low-cost indices. The indications are already well in evidence as demand grows for smart beta, hedge fund replication strategies, passive retirement funds,

¹² A new four-factor model (market beta, size, investment, and profitability) has been proposed by Hou, Kewei et al, 2012, *Digesting Anomalies: An Investment Approach*.

sustainable beta, and quantitative techniques that target carry or volatility, or are trend-following. In 2011, internet entrepreneur and venture capitalist Marc Andreessen notably stated that software was steadily eating the world, disrupting industries like music, healthcare, and more. Indeed in much the same way, technology in the form of systematic indexing appears to be taking over the investing landscape, encroaching deeply into active management.

SMART BETA

Smart beta indices have helped democratize factor-based investing.

The increased scope of passive investing is most evident in the growth of smart beta—the AUM in smart beta indices increased by a compound rate of nearly 40%¹³ from 2010 to 2015 (compared with market-cap indices, which grew 19%), with a proliferation of new indices. The ideas that smart beta is based on, factors such as size, dividends, value, low volatility, momentum, and quality, have existed for a long time, but the remarkable aspect is the way these factors have democratized investing. They provide inexpensive, transparent, and easy access to sources of return that were previously considered to be dependent on managerial skill and only available from active managers. Though smart beta has so far been largely an equity story, certain styles in fixed income have emerged, such as quality, value, and in the case of sovereign bonds, GDP weighting. Recently, the focus of the industry has been on the optimal way to blend the risk premia together in order to create well-diversified “all weather” portfolios and other sophisticated factor combinations that can be dynamic and extendable over asset classes.

Hedge fund or alternate beta further expands the scope of systematic beta to the less well-represented risk premia generally targeted by hedge fund managers.

HEDGE FUND BETA

Hedge fund or alternate beta further expands the scope of systematic beta to the less well-represented risk premia generally targeted by hedge fund managers. Passive hedge fund approaches attempt to capture that portion of hedge fund returns driven by systematic risk exposures (beta) versus non-replicable manager skill (alpha) in a cheaper, transparent and rules based format. Several studies have questioned the skill of hedge fund managers (Fung and Hsieh, 1997; Hasanhodzic and Lo, 2007; Tupitsyn and Lajbcygier, 2015), indicating that their returns are driven by “passive” linear systematic risk factors. Implementation difficulties exist in harvesting these factors passively, especially in terms of liquidity and cost efficiency. However, many hedge funds styles, such as long/short, merger arbitrage, global macro, and relative value credit, invest in liquid securities that trade and are priced daily, much the same as a traditional long-only fund. Long/short equity risk premia is likely to be a primary new product because of high liquidity and it being the natural extension of current smart beta

¹³ Source: ETFGI, November 2015, *Smart Beta equity ETFs/ETPs listed globally have gathered 53.7 billion US dollars in the first 10 months of 2015.*

factor indices. Exhibit 2 outlines some of the typical risk premia strategies commonly employed by hedge funds and examples of how they can be implemented.

Exhibit 2: Examples of Systematic Sources of Risk Premia		
Passive Strategy	Alternate Risk Premia Harvested	Possible Implementation Example
Equity		
Short Equity Volatility	Volatility Risk Premium	Sell equity variance swaps or delta-hedged straddles.
Merger Arbitrage	Deal Failure Risk + Liquidity Risk Premia	Long acquired companies, short acquirer companies.
Convertible Arbitrage	Interest Rate, Call/Takeover & Credit Risk Premia	Long the convertible bonds, short the corresponding equity, and hedge residual credit or rate exposure.
Long/Short on Value, Size, Low Volatility, and Momentum	Value, Size, Low Volatility, and Momentum Risk Premia	Long basket of stocks exhibiting the highest positive risk premia versus short position in negative basket.
Bonds		
Value Bonds	Value Risk Premium	Buy high-value bonds, sell low-value bonds.
High-Yield Bonds Versus Government Bonds	Default Risk Premium	Buy high-yield bonds, sell low-yield bonds.
10-Year Treasuries Versus 2-Year Treasuries	Duration Risk Premium	Long position in 10-year Treasuries, short in 2-year Treasuries.
Commodities		
Deferred Contract Versus Front Contract	Carry Premium	Long position in deferred contract, short position in front month.
Backwardated Versus Contangoed Commodity	Value Risk Premium	Long position in backwardated commodities, short position in front month.
Short Oil Volatility	Volatility Risk Premium	Sell WTI or Brent crude variance swaps or delta-hedged straddles.
High-Momentum Commodities Versus Low-Momentum Commodities	Momentum Risk Premium	Long basket of commodities exhibiting the highest positive momentum versus short position in negative momentum basket.
FX		
High-Yielding Currencies Versus Low-Yielding Currencies	Carry Premium	Long position in high-yielding currency and short position in low-yielding currency.
High-Momentum Currencies Versus Low-Momentum Currencies	Momentum Risk Premium	Long position in currency exhibiting high positive momentum versus short position in negative momentum currency.
Multi-Asset		
CTA/Trend Following	Momentum Risk Premium in Multiple Liquid Instruments	Long multiple securities or assets exhibiting high positive momentum versus short position in negative-momentum assets.

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

Long/short equity risk premia is likely to be a primary new product because of high liquidity and it being the natural extension of current smart beta factor indices.

The industry focus is shifting away from alpha and beta and onto outcomes.

While the collective performance of the hedge fund industry has been in question,¹⁴ the actual investment characteristics of alternate beta and hedge funds are still of extreme interest. The current low-return world presents a daunting obstacle to asset owners, especially those with plan targets. The projected return on investments is a crucial assumption that can be pivotal in the asset owner's ability to meet its contributions. This issue can be seen with U.S. corporate pension plans, where the expected return on plan assets is on average 7.3%¹⁵ per year. In the U.K., this expected return is 6.8%. It is almost impossible to find such returns in fixed income, which is traditionally an important asset for both pensions and insurance—the U.S. 10-Year Treasury Bond rate was approximately 1.9% and the corresponding U.K. 10-Year bond yield was at 1.5% in May 2016.¹⁶ Equity allocations that are too high could make all the difference between funded and unfunded status, given their high volatility. Thus, matching these pension liabilities requires other sources of uncorrelated returns with less downside, which may explain the surprisingly strong flows into alternate beta strategies and hedge funds in the recent few years. Hedge fund factors tend to have low correlation with one another and with market beta, and thus they can be used to improve portfolio diversification, returns, and risk management. The demand for these factors (but with a cheaper fee), greater transparency, and liquidity are key drivers for hedge fund beta indices.

III) Beyond Beta and Alpha: Index-Based Investing for Outcomes

A NEED FOR “OUTCOMES”

Due to the macro and regulatory environment in the recent years, there has been a marked global trend for strategies that align investors with their desired outcome rather than an arbitrary market index. Investment outcomes that suit specific needs such as growth, income, inflation hedging, risk management, or capital preservation resonate far more with individual and institutional market participants. Pension funds and asset managers have woken up to the realization that their end consumers are less worried about benchmarks and do not think in terms of risk/reward. McKinsey & Company's 2013 report “Outcomes Are the New Alpha” states that more than 80% of asset managers now place “solutions” among their top three growth priorities. The average firm interviewed by McKinsey for the survey expected their solutions business to deliver more than one-quarter of its inflows and one-sixth of its revenues in the near future.

¹⁴ Source: 1) S&P Dow Jones Indices, March 31, 2016. The aggregate hedge fund industry (represented by the Credit Suisse HFRI index), even without accounting for fees, has failed to outperform a 60/40 S&P 500[®] stock/S&P 500 bond portfolio every year since 2002. 2) A study by Ibbotson et al found that the majority of hedge fund gross performance is taken by managers in fees (31%) or is a result of traditional asset class betas (42%). Ibbotson, Roger et al, 2011, *The ABCs of Hedge Funds*. Data from 1995-2009.

¹⁵ Wilshire Consulting Report on Corporate Pension Funding Levels, data as of year-end 2014.

¹⁶ Source: Factset, data as of May 2016.

The “outcome” preferences of individuals is also becoming critical, as pension liabilities move from the state and employers to individuals. According to a report by Casey Quirk, individual investors represented 90% of the asset management industry’s net new inflows in 2014.¹⁷ The report also predicted that they would dominate growth in the industry, accounting for almost 120% of the asset management’s inflows through 2020. In most fund market jurisdictions, governments and employers are looking to reduce the cost of retirement benefits and to decrease the risk in their balance sheets by ending pension plans that result in volatile liabilities linked to final year salaries. As employers move away from defined benefit (DB) plans in favor of defined contribution (DC) plans, a progressively greater share of investment risk is being transferred back to end-investors, with commensurately less being borne by intermediaries and companies. The end result is that individuals are forced to bear the burden of every aspect of decision making and risk in retirement planning.

THE OUTCOMES TREND FAVORS INDEXING

With the big focus on fees, fiduciaries and end-investors may find low-cost indices that aim to meet their investment goals appealing.

With the big focus on fees, retirement plan fiduciaries¹⁸ and end-investors may find low-cost index products that aim to meet their investment goals appealing. Automated advisory platforms (robo-advisors), which are set to increase in popularity,¹⁹ also primarily use ETFs for their transparency and low cost in order to offer market exposure. We expect multi-asset indices that allocate dynamically to a variety of risk premia and target particular outcomes to benefit greatly from this trend. Essentially, in outcome-oriented indexing, it is the index that performs the asset allocation and risk management role by first targeting a specific result and then arranging all the component index blocks to achieve the desired cash flows. Through advanced quantitative models, passive portfolios can be created that target customized risk/return profiles that evolve over time, such as those of individuals planning for retirement. Consider the modern sophistication available to address the challenges faced by a DC participant. For example, the [S&P STRIDE Index Series](#) combines a target date glide path with risk management that allows investors to start with an asset growth strategy and then shift to income generation as they progress from their working years into retirement.

MASS CUSTOMIZATION FOR THE LONG TAIL OF INVESTORS

Mass customization is defined as the process that enables the creation of products with enough customization that nearly everyone can find what they want at a low price. There are two main reasons for why mass

¹⁷ Source: Casey Quirk, 2015, *The Roar of the Crowd*.

¹⁸ Almost 50% of fiduciaries surveyed by Cerulli in 2013 stated that they were considering using an all-passive investment lineup to “alleviate the risk of lawsuits.” Source: Manning & Napier, March 2016, *Converge, Volume 9: Collective Investment Trusts (CITs)*.

¹⁹ A.T. Kearney has projected robo-advisory AUM to increase 68% annually to about USD 2.2 trillion in the next five years.

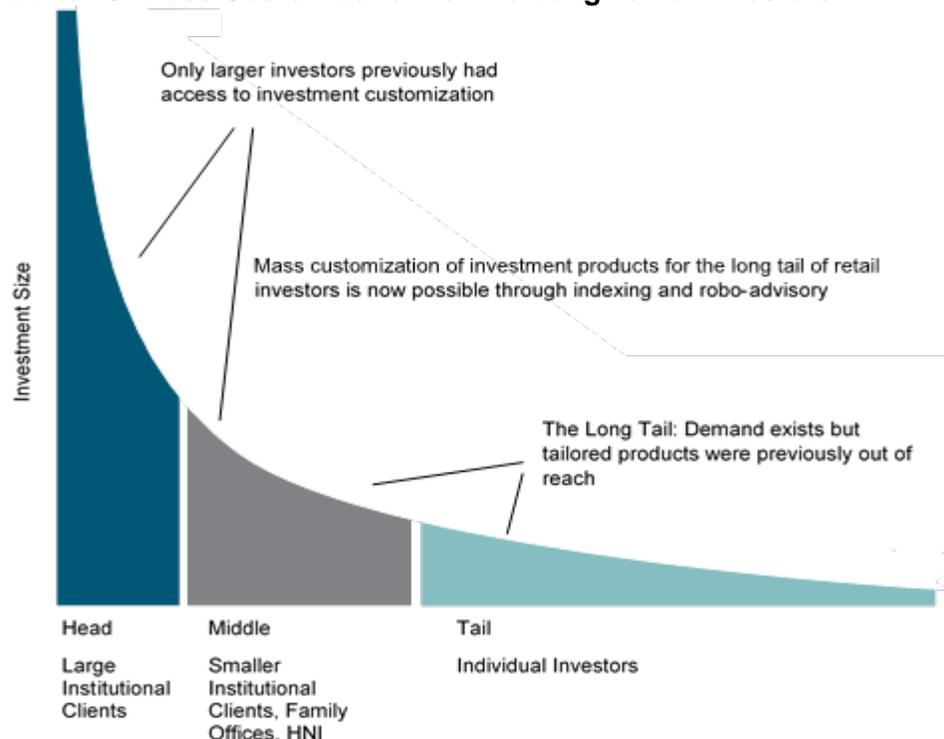
customization for specific financial outcomes based on age, demographics, income, future choices, and risk tolerance may be soon offered.

The first reason is the array of index building blocks that are available and in the innovation pipeline—everything from broad equities across geographies and sliced-up portions of the same—small-cap, large-cap, value, growth, quality, low volatility, high beta, defensive, risk controlled, factors. Within passive fixed income as well, combinations of government bonds, high-yield and emerging-market debt with different weighting schemes are available. Additionally, there are specialized asset classes such as commodities, infrastructure, timber, listed real estate, natural resources, and so on. Secondly, robo-advisors can offer affordable, sophisticated, outcome-oriented index solutions and use simple quantitative models to decide optimal allocation to various index funds, thus cutting out the intermediary fees of financial advisors and active managers.

While automated investment advice is currently targeted mainly for mass retail, as awareness of its benefits increases, it could reach further into the high net worth category over time.

In the first phase of investment mass customization, simple goal-based models that factor in the individual’s age and risk tolerance will be used to target the large number of fee-sensitive retail investors in employee-sponsored 401ks or DC plans. Exhibit 3 illustrates the “investor long tail” that can have access to heavily customized solutions through the potent tool of robo-advisors combined with rules-based strategies. While automated investment advice is currently targeted mainly for mass retail, as awareness of its benefits increases, it could eventually be used heavily by the high net worth category as well

Exhibit 3: Mass Customization for the Long Tail of Investors



Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes.

As index-based investing has grown, there has been a profound reshaping of the investment management industry, which has also affected market participants.

One important innovation has been the offering of index strategies and themes via a basket of stocks that can be purchased through a single order, without the need for a fund structure.²⁰ Instead of buying the basket via an ETF or mutual fund wrapper, the order automates the purchase of all the constituent stocks specified by the index directly on the exchange. Though the sharp fall in transaction costs over the past decade has made funds cheaper, it also makes the savings from pooling funds together less material. If investors can access an investment strategy without going through a fund wrapper, significant hurdles, such as seeding the ETF, are removed,²¹ and granular tailoring for particular individual needs becomes possible. As a concept, this is currently only possible in equities due to the low transaction costs and high liquidity. Although it is in the early stage and not without risk, this trend points to the ability to offer highly bespoke and specialized investor solutions²² to retail in the future.

PART II: WHERE ARE WE HEADED?

As index-based investing has grown, there has been a profound reshaping of the investment management industry, which has also affected market participants. This section provides an overview of some of the key topics.

I) How Much Is Too Much?

While the overall asset management industry has been growing along with passive investing, the share of traditional active funds has been declining, especially those operating in the developed markets of large-cap equity and government bonds. The global AUM share of traditional active products has fallen sharply over the past decade, from 60% in 2003 to around 40% at the end of 2014.²³ Accompanying this dramatic change in flows has been increased speculation on the future of active management and the dynamics of active and passive investing.

Passive investing (specifically, using market-cap-weighted indices) is, in certain respects, based off of the efficient markets hypothesis.²⁴ In such a market, the simplest strategy would be to hold all the securities passively in proportion to their market cap. Ironically, market efficiency also depends on active managers doing research and identifying mispricing. The argument that is repeatedly raised with every new indexing milestone is that, as passive market cap AUM grows, an inflection point may come when a

²⁰ The robo-advisor Wealthfront now offers tax-optimized direct indexing. Source: "Wealthfront Tax-Optimized Direct Indexing." *Wealthfront Website*. Wealthfront Inc., 2016. Web. 30 May 2016.

²¹ The EUR 200-EUR 300 million in AUM required to have fund liquidity is bypassed.

²² For example, Motif investing (an automated advisor) allows investors to tailor existing themes or even create their own themes that can be shared with other Motif users.

²³ Source: BCG, 2015, *Global Asset Management 2015: Sparking Growth with Go-to-Market Excellence*.

²⁴ Though even in inefficient markets, indexing should be the choice for the market participants who believes their skill is not as good as the average of other participants.

particular market is so dominated by market-cap-weighted investors that the market ends up not being sufficiently researched, resulting in inefficiency.

With more passive investing, the low-to average-skilled investors' prosperity can increase.

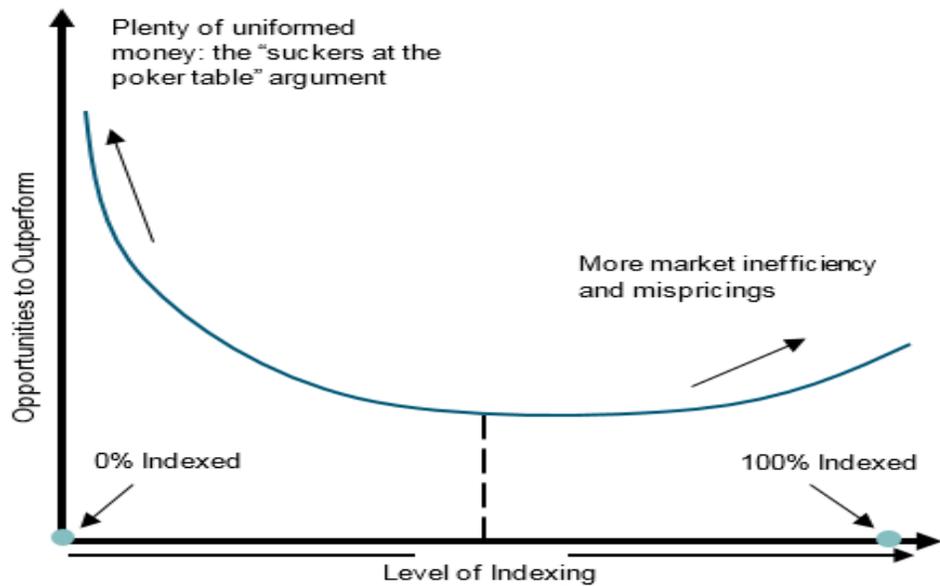
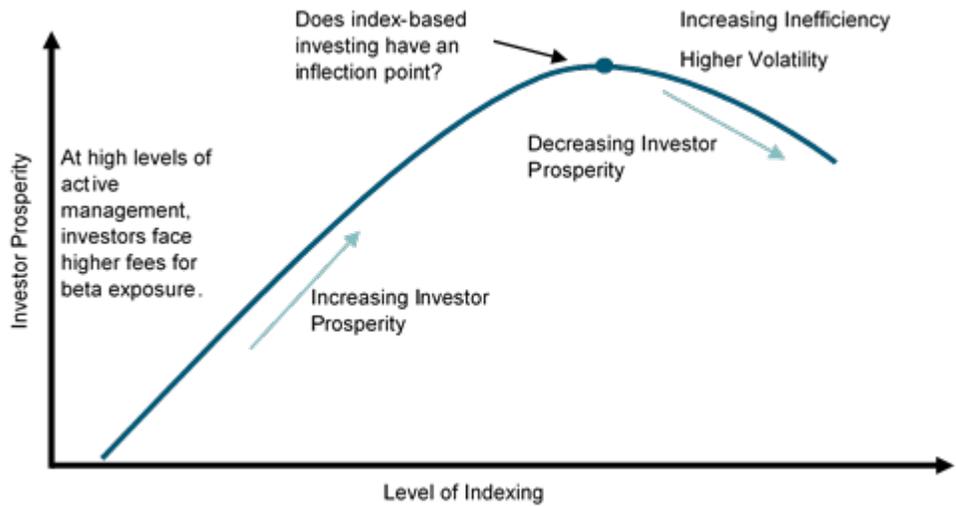
Thus, there appears to be a paradox. With more passive investing, the low-to average-skilled investors' prosperity can increase—fees are lower for market exposure and indexing helps avoid being on the losing side of the zero-sum game. However, beyond a point, increased indexing can be counterproductive to investor well-being because of a resulting deterioration in market efficiency (according to the argument). This supposed relationship is depicted by the inverted parabola in the top pane of Exhibit 4, where the y-axis is the aggregate utility for the low- to average-skilled investor (the utility is a combination of returns after fees and market efficiency).

The parallel argument exists for the superior active manager: an increase in passive investing can be detrimental to an active manager because there are fewer players with below average skill, and the manager has to compete against similarly skilled players for the same pool of alpha. Players with below average skill in this context not only refers to less-informed players but also includes investors who are not specifically focused on stock selection. As more and more of this money is passively invested, there will be greater competition for fewer opportunities—the “shrinking alpha” scenario.²⁵ Again, this decline in opportunities is supposed to be non-linear, and at some point (theoretically), the effect of too much indexing could start to generate mispricings for the superior manager to take advantage of.²⁶ The relationship can be represented by the convex function in the bottom pane of Exhibit 4.

²⁵ Shrinking alpha is also consistent in a world driven by technology and easy access to information.

²⁶ Even at extreme inefficiencies, a market-cap index-based investor still gets the average return—that is the math as outlined by William Sharpe. But the few winning active managers will have a very high outperformance offset by a few big losers; the opportunity to outperform increases as does the chance to lose. Market inefficiency does not alter the zero-sum game.

Exhibit 4: Passive investing Versus Market Efficiency



Source: S&P Dow Jones Indices LLC, abnormalreturns.com.²⁷ Charts are provided for illustrative purposes.

There are a few plausible reasons why the current exodus to passive investing is not a major concern.

No one knows where passive investing’s inflection point is, or if it exists at all, but there are a few plausible reasons why the current exodus to passive products is not a major concern.

1. The Relative Turnover Argument

Investment consultant Charles D. Ellis put forward the turnover argument: the price discovery mechanism, which keeps markets functioning efficiently will probably be unaffected at even a high indexed point, as there is a massive difference in turnover between active and indexed funds.²⁸

²⁷ First chart of Exhibit 4 adapted from “The Bernstein Curve.” *Abnormal Returns Blog*. Abnormal Returns, 19 Feb. 2016. Web. 30 May 2016.

²⁸ Source: Charles D. Ellis, 2014, *Rise and Fall of Performance Investing*, Footnote 15.

Currently index funds only account for less than 10% of the annual turnover. With the reasonable assumption that the average active fund turns over 100% annually, then even in a scenario where index-based investing increases to 70%, active funds would still be carrying out 80% of trades, thus not damaging price discovery. In fact, to make turnover equal between an active fund and the buy-and-hold passive segment, the mix should be 90% passive and 10% active—a long way off from the current 20%-80% mix.

There is a big difference in turnover between active and indexed funds.

It must be noted that the 10% turnover rate is for a passive fund or ETF when used as a buy-and-hold investment. This is in contrast to the usage of ETFs by the sell side and the buy side as rapid trading vehicles because of their superior liquidity. However, there is a clear distinction between such usages of indexing, which we classify as active, versus funds bought by the buy-and-hold investor.

2. Where Is the Flow to Passive Investing Coming From?

While it is true that passive funds are seeing high inflows, it is possible that a significant portion of those inflows is coming from declining benchmarked accounts and “closet indexers.” Research shows that the share of closet indexers has been steadily declining from 2005 to 2015,²⁹ and under regulatory pressure, it is this segment of active management that will most likely face outflows in the future. Some studies have shown closet indexers to compose as much as 60% of active funds. It seems improbable that moving from implicit closet indexing to explicit index investing would affect much change in market efficiency.

3. Price Setting Depends on the Existence of Active Managers, but a Small Number Goes a Long Way

It is understood that active investors set prices through their trades and determine market cap—which the passive investor holds in his portfolio. Even if active managers focusing on security-level mispricings were a significantly smaller segment than currently, price setting would still occur when these active managers trade with one another, no matter the volume traded. Secondly, when a high proportion of investors are not specifically focused on company level research and valuations, it is hard to conclude that their exit to indexing is anything more than a reduction of noise in the system. Markets could be equally well served by a smaller quantity of more focused investors setting prices.

²⁹ Source: Morningstar, Caquineau, Mathieu et al, 2016, *Active Equity Share in Europe Equity Funds*.

SO WHERE ARE WE NOW?

Market-cap-weighted funds may continue to grow in the near future, though the rate could tail off eventually.

As of 2016, we seem to be far from any such turning point in index-based investing due to created market inefficiency—only 20% of global AUM is invested in passive strategies,³⁰ stock spreads are tight, dispersion is at 1990 levels, speed of absorption of new information is high, and displayed market depth for the median stock has grown nearly 300% in the past eight-year period.³¹ The current market also points to diminishing alpha consistent with less-skilled players opting for index-based investing. There is evidence that excess returns over the benchmark have been declining, which indicates that active managers are not finding opportunities to exploit.³² Additionally, the proportion of active managers that outperform has also declined over the years.³³

Market-cap-weighted funds may continue to grow in the near future, though the rate could tail off eventually. The growth rate is already higher in non-market-cap-weighted passive strategies, which, like active funds, aim to take advantage of risk factors, mispricings, and anomalies that may exist in the market (the smart beta innovation, as we saw in the previous section “Passive Is Eating Active”). A conceivable outcome in the near future is that as index funds grow, active funds will be forced to become more “truly active” (we explore this later). Studies of U.S. mutual funds show that funds with higher active share and more concentrated portfolios have outperformed their peers with lower active share.³⁴

CLEARING UP A POINT OF CONFUSION

On a separate note, as we talk about active versus passive investing, it is puzzling that investor herding issues are brought up so frequently in the context of passive market-cap-weighted indices, when inflows to broad market funds do not change the relative pricing of a particular component sector or security. A passive market-cap-weighted fund could become “expensive” with too many inflows, but this is relative to other asset classes and market segments, and it does not impact the pricing of the largest constituents within the index any more than the smaller. Too many dollars chasing a particular asset—for example, emerging market equity (either in the form of active or passive products)—will raise emerging market stock prices, but the decision of whether or how much to invest in that asset is an active decision in the first place. Active strategies (or even smart or hedge fund beta strategies) will be far more capacity constrained than market-cap-

³⁰ Source: Casey Quirk, 2015, *Global Investment Management Assets, Revenue, and Operating Margins Slump in 2015*.

³¹ Source: Angel, James; Harris, Lawrence; Spatt, Chester, 2013, *Equity Trading in the 21st Century*.

³² Source: Credit Suisse, Mauboussin, Michael; Callahan, Dan, 2013, *Alpha and the Paradox of Skill*.

³³ Source: Berras, Laurent et al, 2009, *False Discoveries in Mutual Fund Performance*.

³⁴ Source: Cremers, Martijn; Petajisto, Antti, 2009, *How Active is Your Fund Manager?*

weighted strategies, which actually allocate according to constituent capacity.

II) Unbundling of Returns

As investors become progressively more informed, it is possible that fund managers will eventually be rewarded only for returns that cannot easily be replicated by vanilla quantitative techniques (the alpha return in the following equation).

Fund Return	=	Market Return	+	Risk Premia Return	+	Alpha Return
Replicable by		(Market Cap Index)		(Long-Short Risk Premia Indices)		(not replicable systematically)

Alpha return arises from a combination of manager decisions made about security selection, asset allocation, timing, and execution, which cannot be replicated systematically. This return is rare and difficult to come by, unlike beta³⁵ (either market beta or smart or alternate beta), which can be obtained systematically. To an informed investor, it becomes increasingly hard to justify all return sources being packaged together and charged at a high active price tag when components can be “unbundled” and accessed at much cheaper rates. Indeed, when the performance of most fund managers can be broken down into subcomponents by investment style, weighting, timing, etc., the logical conclusion would be to use the corresponding granular components as benchmarks for the fund manager and dissect the fees accordingly.

It is possible that fund managers will soon be rewarded only for returns that cannot easily be replicated.

Thus, the contribution of smart and hedge fund beta to asset management may not be restricted to the investable products themselves. It is possible that these indices will have a big role to play in making active managers more accountable for their performance. This development could be significant for both active managers and the indexing business model. If investors wish for their fund managers to be truly active, a greater understanding of their returns through specific benchmarks is essential so as to encourage more active risk-taking in their active mandates. Having said that, tying active managers strictly to a number of component indices as benchmarks is likely to be counterproductive with distorted incentives—this has already been witnessed with the closet indexing phenomenon. Rather than benchmark-constrained, we believe the focus should be on being benchmark-aware as well as benchmark-accountable with managers showing conviction with differentiated portfolios. We anticipate an increase in the number of benchmarking risk premia indices³⁶ as well as the number

³⁶ There are practical difficulties. Ideally, the benchmarks should represent the correct time horizon and account for implementation issues such as slippage.

of metrics used to estimate fund differentiation from their benchmarks, including and beyond active share, tracking error, information ratio, and beta correlation. Using any single metric is likely to suffer from unintended consequences in terms of manager actions. Active share for example has been highly publicized recently. However, this measure while insightful, has significant limitations stand-alone due to the incompleteness of its information³⁷ and its propensity to be easily gamed.

III) The “Hollowing Out” of Active Management

THE FEE ISSUE BECOMES EVEN MORE RELEVANT IN A LOW-RETURN WORLD

Investing is a process fraught with uncertainty. Possibly, the only area that the investor has certainty about is the cost, and particularly the indisputable fact that compounded costs over the long term significantly erode returns. The fee differential for a “typical” active equity fund versus a passive fund is around 65 bps in the U.S. and 130 bps in Europe (with average annual fees of around 70 bps versus 5 bps in the U.S. for active versus passive strategies and 160 bps versus 30 bps in Europe).³⁸ Given that a performance of 50 bps over the benchmark is considered within the top quintile of performance, this fee is very high, as at current levels it 100% exceeds any incremental performance over the benchmark.

When AUM pressure builds, active managers are also unlikely to let their business die, and they may react by cutting fees.

The same analysis for the hedge fund model paints an even bleaker picture of performance versus fees as highlighted in footnote 17. Without the 20%+ returns that marked the early years of the hedge fund industry from 1990 to 2000, it is increasingly unlikely that institutions, high-net-worth individuals, and family offices will continue to be willing to pay the 2% management fee and 20% performance fee model (2/20). The competitive pressure from systematic indices is likely to bring down the fee structure for the majority of the industry, and not just closet indexers. When AUM pressure builds, active managers are also unlikely to let their business die, and they may react by cutting fees. We can already see the demand for better liquidity, more transparency, and lower costs in the rising growth of “liquid alternatives”, which uses sophisticated strategies but in a much cheaper mutual fund wrapper.

THE IMPACT OF INDEX-BASED INVESTING WILL BE EVIDENT IN SOME ACTIVE SEGMENTS

With the prospect of diminishing fees, it is probable that the growth of indexing will make several styles of active management less profitable while also favoring the growth of other segments. Styles that can be

³⁷ Two portfolios with 70% active share with respect to a benchmark can be significantly different in terms of exposures and tracking error.

³⁸ Source: Morningstar, Lipper, 2015.

The rise of indices affects active management, with certain segments facing considerable pressure from fees.

condensed into a well-defined and repeatable process with clear inputs and outputs will be the most vulnerable to automation. The styles of management that can best withstand fee erosion depend in some way on what can and cannot be “quantified” at a low cost—not all active approaches can be replicated in a systematic manner at low cost (at least not in the near future). An example of an unquantifiable strategy³⁹ would be activist investing, where investors actively buy up large stakes in companies and then monitor and engage with them. Similar to activist hedge funds are private equity firms, a large component of their style is their influence over the direction of their portfolio companies. Like private equity, other specialist funds that focus on illiquid assets⁴⁰ will also be relatively immune to erosion, given that these markets are harder to quantify. In contrast to public markets, in which investors have all the information, illiquid markets are difficult to replicate exactly, as securities cannot always be purchased quickly at a reasonable price.

Although they have quantitative beliefs in common, there is a considerable difference between a systematic index and active quant funds. While now there is virtually no reason to pay a manager 2/20 fees for the simple end of quantitative strategies, such as trend following using a moving average variant, the genuinely active quant space is a different realm altogether, in which the mandate is to harness the latest in quantitative techniques, research, and technology to model complex interactions between liquidity, transaction costs, valuation, and execution. Active quant funds are growing—in 2014, 52% of new hedge funds launched were systematic, 13% both systematic and discretionary and only 35% discretionary alone, according to data provider Preqin.⁴¹ Active quant funds can exist alongside smart and alternate beta, even with much higher fees, by competing on extreme sophistication in algorithms, big data, machine learning, and execution through significant investment in technology and talent. On the other hand, in order to stay low cost and, perhaps more importantly, transparent, indices will always be relatively more constrained and less refined in their algorithms, targeting the “bulk” of risk premia from anomalies.

The interesting question is: what will happen to traditional benchmarked active management? In order to preserve their business, over time these funds are likely to either lower fees or move toward either unconstrained multi-asset mandates or a more “High Conviction” approach, with the latter characterized by high active share, high tracking error, low turnover, and concentrated portfolios. A high conviction approach would involve focusing

³⁹ Indices exist which attempt to replicate the performance of activist investors, hedge funds or private equity based on either information from form filings or by using historical statistical relationships to determine exposures and thereby producing similar patterns of return. This is different from systematically implementing the active strategy through a bottom-up approach.

⁴⁰ Though even illiquid assets can have high beta.

⁴¹ Source: Preqin, September 2015, *Hedge Fund Spotlight September 2015*.

on a handful of companies, understanding the financial statements in exhaustive detail, knowing the management, and taking a strong point of view. What is noteworthy about a process involving such level of specific detail is that it cannot easily be scaled and systematically applied to other securities in the market. Since these funds that focus on idiosyncratic sources of returns (returns outside of replicable beta) have much smaller capacity, the inference is that the size of the overall segment will be much smaller in the future.

The other way traditional active funds can retain fees is by moving toward unconstrained investing and adding other asset classes, derivatives, leverage, and shorts to their mandate. Studies show that traditional benchmarked mandates are now under structural decline, with a shift toward unconstrained investing and alternatives⁴² that allow them to use a more active set of investment techniques to target specific exposures. Thus, in the long term, there seem to be trends of both divergence and convergence at play in the active management industry. Divergence and clear positioning away from traditional broad beta mandates is already underway, but traditional active managers and alternatives will converge to some extent in unconstrained mandates or as suppliers of multi-asset solutions.

Traditional active management could move toward unconstrained and high-conviction approaches.

An interesting effect of not being constrained by a benchmark is that investment performance may improve,⁴³ as managers are better able to develop a thorough understanding of portfolio companies and the risks that influence their long-term business values. In contrast to a high-conviction design, investing in a large number of companies and trading frequently may curtail long-term returns, as managers try to lock in short-term gains. Such wide-net approaches can also add to trading costs, further detracting from returns. Also, the more diversified and closer a manager is to the benchmark, the less likely it is that the manager will outperform, as it is difficult in the long run for closet indexers to overcome their own fees and beat the net return.

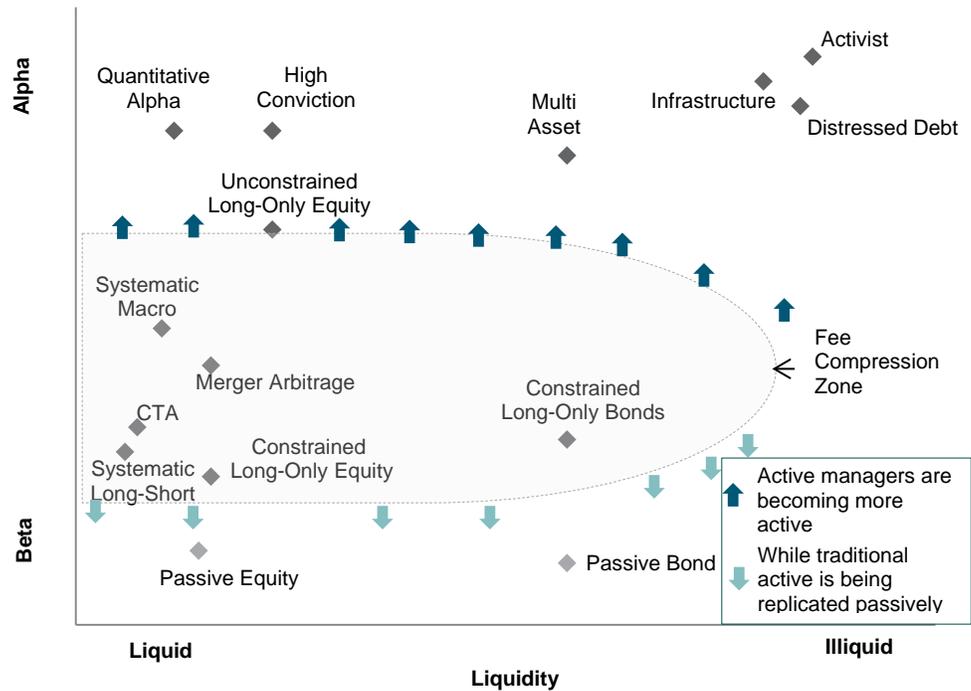
Thus, like many other industries, the rise of index investing is “hollowing out” the middle⁴⁴ areas of the investment management industry (see Exhibit 5). Active funds that will be most affected are those that operate in liquid markets and track beta or enhanced beta, as their value is virtually indistinguishable from the cheaper trackers.

⁴² Source: Casey Quirk, November 2013, *Life After Benchmarks*; BCG, 2015, *Global Asset Management 2015: Sparking Growth with Go-to-Market Excellence*.

⁴³ Source: Ely, Kevin, 2014, *Hallmarks of Successful Active Equity Managers*.

⁴⁴ Middle in terms of size as well. We mentioned earlier the pressure on mid-sized active firms that do not target niches or benefit from scale.

Exhibit 5: Passive Is Eating Into Active, Active Is Becoming More Active



Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes.

IV) When Passive Is No Longer Passive and Beta Is No Longer Beta

In the face of the many changes and the broadened scope of index-based investing, part of the challenge for market participants is that the original terminology is now quite strained. The term “passive,” which denotes “passively managed,” could cover an index that is anything but passive in its complexity and ability to take risk; similarly “beta” returns could be far from representative of the broad market. The original active versus passive debate was typically based on the lines of active versus market cap. Today, when ETFs are being used by active funds themselves, the topic seems outdated, as passive funds are clearly the most popular choice for low-cost beta exposure. In reality, the debate has evolved to be between active and quasi-active, or put another way, between expensive human judgement and cheaper technology-driven systematic approaches. In fact, just as difficult as it was to choose the right manager in the quest for superior risk-adjusted returns, it is now becoming difficult to select the right systematic strategy, given the explosion of product choice. Even something as simple as defining a factor, say value, can be done in a number of ways—book value, earnings, cash flow, or a combination of these. Defining the quality factor is an even more subjective exercise. Different design choices in factor building, especially on the more complex end of the spectrum, can result in different exposures and, ultimately, returns.

A “passive” index could be anything but passive in its complexity and ability to take risk; similarly, “beta” returns could be far from representative of the broad market.

Those who invest in smart beta strategies should be cognizant of the fact that they are no longer capturing the market performance as a whole. That particular objective can only be achieved through a market-cap-weighted fund, which replicates the entire composition of that particular market. Smart beta involves subjectivity and, as a result, is likely to deliver returns that are different from the overall market return, as is its aim. Whenever a deviation from market cap is taken, it becomes an active decision, whether it is to favor undervalued stocks or those that pay high dividends. Investors can still face losses, but the fundamental difference with low cost passive investing is that failure may not be accompanied by a high fee.

On an ending note, we emphasize that the perspective in this paper has been to avoid the “active-bad, passive-good” rhetoric. Yes, there is a wealth of evidence that on aggregate active management within a market adds no value relative to passive management, even in less-efficient market segments.⁴⁵ Additionally, there is evidence that active managers cannot time the market.⁴⁶ While all of this raises strong questions, it has to be kept in mind that the aggregate view is not the full view. Though the average of active fund returns is generally the same as the benchmark return,⁴⁷ and the average will necessarily underperform the benchmark after fees, it is a mistake to equate one active manager with the average. Aggregate poor performance does not imply that there are no skilled managers or that no attempt should be made to increase performance, either through alternate indices or an active manager.

It is unclear what the new, complex investment landscape will look like, but the tide toward a world of quantitative models could potentially bring new risks to the market.

V) Other Challenges in a More Indexed World

INTRODUCING NEW RISKS

It is unclear what the new, complex investment landscape will look like, but the tide toward a world of quantitative models could potentially bring new risks to the market. Vast numbers of rules-based models interacting with each other and with algorithmic execution trades has the potential for investor herding and correlated market movements. As we move towards a world with automated end-to-end investing, errors in data integrity, quantitative models, trading algorithms, and execution could potentially have implications for market dynamics, liquidity, and systemic risk. Bubbles and manias are not unique to technology or systematic indexing—think 1987, or even the tulip mania in the 1700s—and herding is a historically observed behavioral phenomenon. However, intuitively, whenever you

⁴⁵ Almost every study published, academic or otherwise, which compared active funds and their benchmarks has been unanimous on this point. The SPIVA[®] Scorecard, published biannually by S&P Dow Jones Indices, compares the performance of active funds against their benchmarks and comes to similar conclusions.

⁴⁶ Sources: Cuthbertson et al, 2010, The Market timing ability of UK Mutual Funds; Blake et al, 2015, New Evidence on Mutual Fund Performance; Drew, Michael et al, 2002, Market Timing, Selectivity and Alpha Generation.

⁴⁷ This assumes no other pool of investors. In reality, active fund managers may not accurately represent the average active dollar invested in the index.

have computers operating very quickly, more quickly than humans can react, there could be instances of flash crashes, sharp moves, and high volatility. The increasing automation of investments could also marginalize returns, as strategies become based more on big data, signal processing, and computer technology.

LIQUIDITY AND CROWDING ISSUES

As index products can provide easy access to sometimes illiquid securities, there may be consequences where low liquidity increases volatility and exacerbates moves. Non-market-cap-weighted strategies are capacity constrained, meaning performance can suffer if the same strategy is chased by too many assets. Even in normally liquid markets, conditions for a liquidity crisis could be created when everyone is on one side chasing the same signals (especially momentum and volatility signals, which react to market changes). A fund unwinding its positions in normal conditions would not have any impact except when there exist several other funds holding similar positions and reacting to the same signals. Unwinds in one fund could trigger the signals of other funds, which in turn causes a further set of funds to sell starting a chain reaction.

Indices and quantitative strategies are typically the result of a mix between intuition and empirical research, including the back-testing of strategies against historical data.

OVERRELIANCE ON BACK-TESTING

Indices and quantitative strategies are typically the result of a mix between intuition and empirical research, including the back-testing of strategies against historical data. While there is certainly important information to be gained from historical analysis, the danger is when these rules become unnecessarily complex and rely on uncertain assumptions. Quantitative funds (though of the black-box kind) faced unprecedented losses in 2007, as market regimes shifted and volatilities, correlations, and other relationships changed from their input assumptions.

Additionally, there is the issue of back-testing being designed to extract perfect returns from historical data. The practice of data mining for the express purpose of conjuring up idealistic historical performance can have diminishing returns when the strategy is live, especially as the rules applied become more elaborate and arbitrary. What is needed are rules, which are simple and without too many parameters, so that the distinction can be made between a back-tested and an intuitive and robust result.

NEED FOR MAINTAINING INTEGRITY AND TRANSPARENCY

Innovation may be crucial to attracting and retaining retail and institutional investors, but the passive industry needs to ensure that it does nothing to harm its earned reputation for transparency and value. It would be unfortunate if, in the quest to provide superior products, opacity was added, leading to greater uncertainty and immeasurable impacts.

The story of systematic indexing has been powerful.

Of course, how the future shapes up also hinges on regulation. The brakes on how fast technology and quantitative indexing will change the investing world will be applied by regulators, and they have the potential to significantly alter the course of the future.

CONCLUSION

"The future is like everything else, it is not what it was" –Paul Valery.

The story of systematic indexing has been powerful, though it is one of innovation in cost and replication rather than of innovation in investment theory. Investors have never been exposed to so much choice in low cost passive products which target multiple risk factors and customized outcomes. A number of tailwinds will enable index-based investing to further change the fund management landscape, with significant implications for investors, financial advisors, and active managers. The unbundling of returns through smart and alternate beta indices may help investors better understand return sources and allow more cost-effective targeting to both active and passive strategies. Active management is also likely to evolve in response, by targeting returns not easily replicable by systematic strategies. This shift in the landscape is inevitable and mirrors what has been seen in other industries with the advent of technological improvements.

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