

# Smart Beta: Evolution, not revolution

New dimensions of diversification

May 2016

## IN BRIEF

The concept that investors could earn a positive return by holding a sufficiently representative cross-section of stocks dates from the launch of the first index fund, in 1975. In the four decades since, index investing has undergone a subtle but profound evolution. Today's passive investments offer more attractive properties than the simple aggregate performance of the investible universe. Two key innovations are:

- Diversifying “factors” that can systematically earn a premium distinct from the market risk premium harvested by cap-weighted indexes.
- A focus on the dimensions of diversification, including stock specific, sector specific and, most recently, factor specific risks, based on rigorous empirical research.

We anticipate that investors will further distinguish factors that systematically harvest a premium from risks that simply do not. An intriguing and potentially important innovation coming out of this effort will be the structuring of portfolios that earn returns not only by gaining exposure to risk factors that offer a premium but by “actively” hedging exposure to uncompensated risks.

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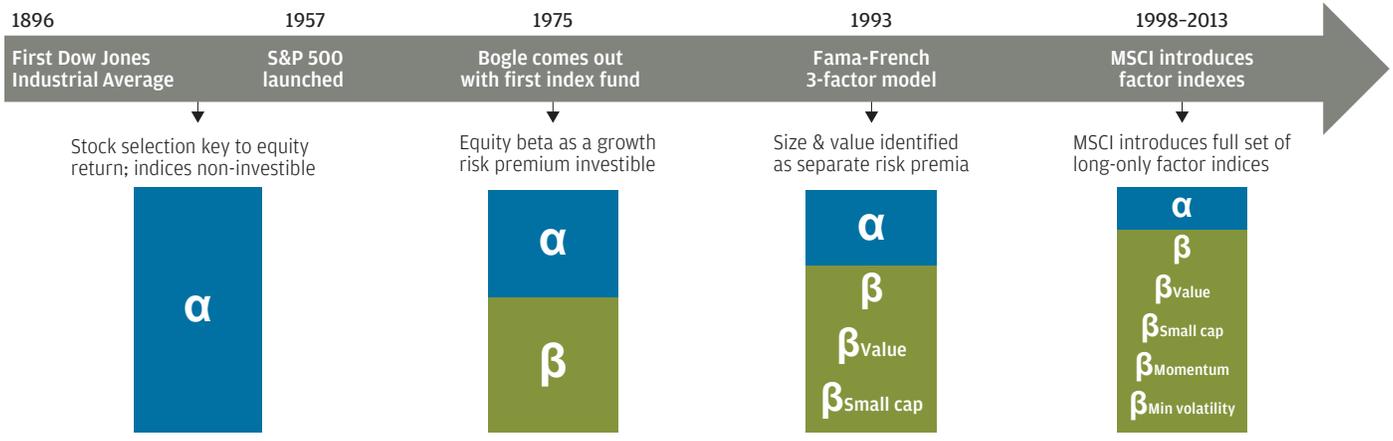
**THE INVESTMENT INDUSTRY IS ABUZZ WITH TALK OF SMART BETA, AND MANY ARE TOUTING IT AS A REVOLUTION IN INDEXATION.** We argue in this paper that smart beta is not a revolution but rather the latest iteration in the evolution of a concept that has been gaining ground for four decades. While the discussion is largely framed around factor exposures, we identify two distinct components of index design. How factor exposures are dealt with is important—but equally important is the approach to portfolio construction. The focus of both steps, since it is the way they add value, is maximizing diversification.

## THE EVOLUTION OF BETA

The concept of an “average” market return existed as early as the 19th century (**EXHIBIT 1**, next page). In the early years of the fund management industry, prior to the development of investible indexes, investors attributed 100% of a fund's return to manager skill (“alpha,” as it would later come to be known). “Beta”—the idea that investors could earn a positive return, or risk premium, simply for holding a large number of risky securities—was still alien when John C. Bogle launched the Vanguard 500 Index Fund in 1975. Over time, it became clear that a significant portion of these returns were driven by exposure to the equity risk premium—the return resulting from *economically compensated risk*.

Through time, beta has gained ground as an explanation for equity returns, as a benchmark for active managers and, finally, as a cheap and efficient direct investment

EXHIBIT 1: THE EXPANDING ROLE OF BETA



Source: J.P. Morgan Asset Management. For illustrative purposes only.

The beta insight led to the birth of passive investing. The idea that the vagaries of the market can generate a positive expected return transformed the investment landscape. With decades of hindsight, it is easy to take for granted the significance of this conceptual leap, but it was fought fiercely at the time. As beta picked up steam, the financially savvy would no longer invest in active managers without comparing their results with a benchmark. Some managers, however, were able to repeatedly outperform the market using investment styles, or factors, as simple as a bias toward smaller companies or those with lower price-to-earnings multiples. These new compensated premia could be reflected in specialized indexes in the same way a broad market index tracks overall market beta. Value managers were now measured against a value index and small cap managers against a small cap index.

As our understanding of the drivers of equity returns has evolved, the portion of returns we attribute to alpha has diminished. Passive investing continues to raise the bar for active managers, giving affordable access to more and more of the diversified, compensated risks that make up successful investment portfolios.

### BETA, BUT BETTER

One more breakthrough was required for the discussion around smart beta to begin: cutting index investing's link between market capitalization and portfolio weight. Indeed,

many practitioners define smart beta as anything that is not a cap-weighted index. Manifestly, not everything that avoids cap-weighted is "smart." Nonetheless, principled and effective methods have emerged for constructing portfolios using fundamental weighting, simple weighting schemes and optimization. These too to some extent earn their excess returns through exposure to factors, but their focus on diversification has so far earned them unexplained returns in excess of established premia in many cases.

The most recent innovation in beta has been the introduction of explicit multifactor approaches. Passive providers, which had focused on gaining single-factor exposure through benchmarks like the S&P 500 Value Index or the Russell 2000 Index, which tracks small cap stocks, began to combine factor exposures in more robust portfolios. Premia often have low correlation to one another and can perform well in different market environments. If a suitable set of factors is chosen, a multifactor portfolio can deliver superior risk-adjusted returns. Moreover, capturing multiple premia can be more efficient in terms of implementation, having lower turnover if trades offset. (To cite a simple example, a combined portfolio of valuation and momentum factors can offset the purchases it might have made from the momentum factor against sales from the valuation factor, retaining the correct exposure to both without transacting.)

While this focus on diversifying premia is positive, we make the case here that additional benefit can be gained in portfolio

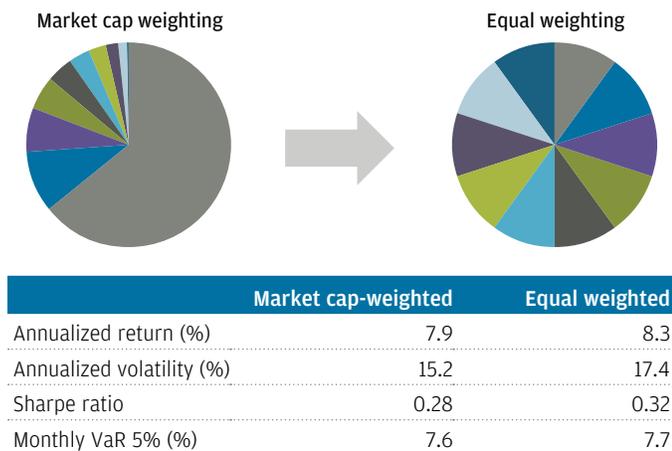
construction. In other words, we argue that there are two opportunities for diversification: increasing the number of compensated risk premia and decreasing the exposure to uncompensated factors. Compensated risk premia are those that have an expected economic return to them and should form an explicit part of efficient beta capture. Uncompensated risk factors, on the other hand, are merely descriptors of risk, and we should seek to avoid or diversify them whenever possible. A thoughtfully constructed portfolio must address all relevant dimensions of diversification. In the context of equity indexation, this means considering diversification at the stock level, at the sector level, at the regional level and at the factor level.

### Stock level diversification ... without risk concentration?

The simplest aspect of diversification is the division of a portfolio among many different stocks. While traditional large cap indexes comprise many names, they are typically very top-heavy in their allocations. For example, 46% of the S&P 500 is allocated to the top 50 companies (EXHIBITS 2A and 2B). This clearly ties the fortunes of such indexes to the fortunes of a minority of businesses. Extreme adverse events in any of these names disproportionately impact market cap-weighted portfolios, an unnecessary source of risk.

### Cap overweighted: Cap-weighted indexes tend to be very top-heavy; an equal weighting scheme can improve diversification at the stock level, which tends to improve risk-adjusted returns

EXHIBIT 2A: RISK CONTRIBUTION BY MARKET CAPITALIZATION DECILE



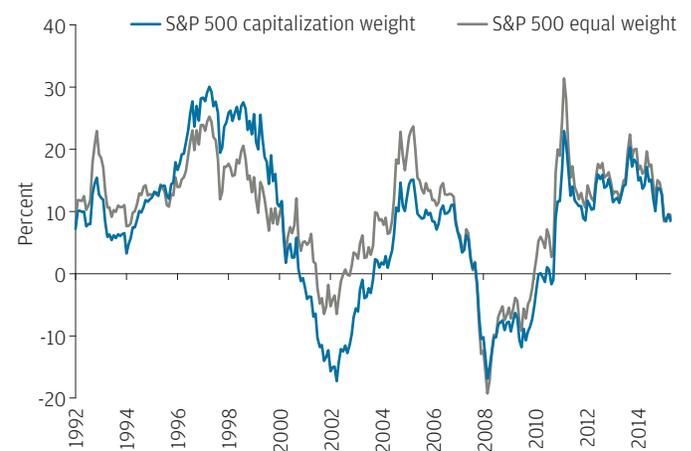
In the absence of active views on the relative performance of stocks, equalizing the risk contribution from each stock is the most straightforward position to take. It is important to note that investment in a cap-weighted index implies a belief in the efficiency of the market portfolio—that is, a belief that the average of the holdings of diverse investors, with their differing risk preferences and expectations, should be suitable for the individual investor. Equal weighting, be that equalizing the dollar investment or equalizing compensated risk by some sector or factor or other measure, requires no such assumption. This is the spirit of passive investing, even if rebalancing the portfolio resembles “active” trading.

This type of approach is known as risk parity. It is not a particular mathematical formula but rather refers to the principle that in the absence of views, diversification should be maximized. More sophisticated ways of achieving maximum diversification also fall under this umbrella, but all involve more assumptions, exposing the investor to the possibility of using an erroneous parameter or an inaccurate model.

### Sector level diversification: Bubble insurance

One of the main reasons we can expect stocks to perform differently at different times (and hence to diversify a portfolio) is that they are shares in companies engaged in different

EXHIBIT 2B: ROLLING 3-YEAR RETURN



Source: Standard and Poor's, J.P. Morgan Asset Management; data as of February 29, 2016.

**Bubble markets: Historical periods of significant imbalance in sector risk contributions have created unnecessary exposure to tail events in the overweight sectors**

EXHIBIT 3A: GLOBAL DEVELOPED EQUITIES—FTSE DEVELOPED MARKET CAP-WEIGHTED INDEX, LEAD-UP TO FINANCIAL CRISIS, JANUARY 2007

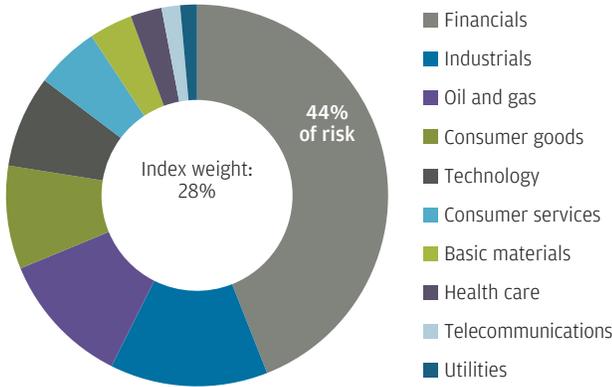
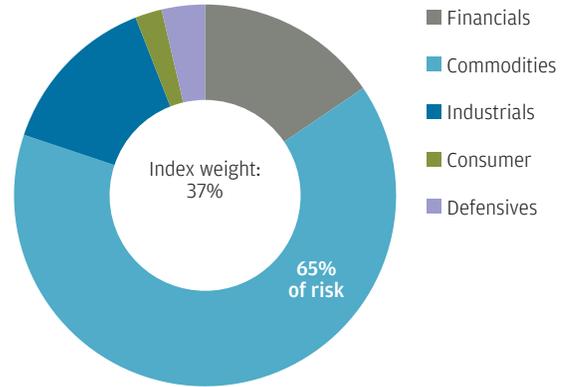


EXHIBIT 3B: GLOBAL EMERGING EQUITIES—FTSE EMERGING MARKET CAP-WEIGHTED INDEX, PEAK OF COMMODITIES BUBBLE, JUNE 2008



Source: FTSE, J.P. Morgan Asset Management.

businesses. While there is no flawless classification system for stocks, we can divide them along commonly agreed sector lines and apply risk parity to those divisions of the investment universe (EXHIBITS 3A and 3B).

**The benefits of balance: Equal-weighted sectors have consistently offered a better risk-return proposition than the cap-weighted index**

EXHIBIT 4: ROLLING ANNUALIZED 3-YEAR RETURN



	Market cap-weighted	Equal weighted
Annualized return (%)	7.9	8.8
Annualized volatility (%)	15.2	14.3
Sharpe ratio	0.28	0.39
Monthly VaR 5% (%)	7.6	6.7

Source: MSCI, J.P. Morgan Asset Management; data as of October 31, 2015.

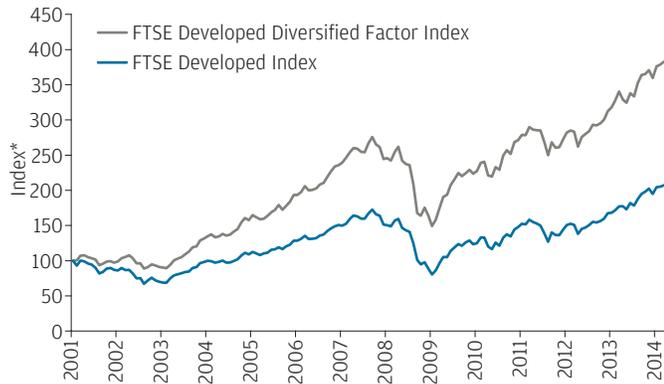
Sector level diversification has been one of the most successful illustrations of the power of naïve allocation in recent history. An equal sector-weighted index has outperformed the cap-weighted benchmark through multiple market cycles on both a raw return and a risk-adjusted basis. It has done so most notably by avoiding large concentrations when speculative events have driven up the weight of certain sectors (EXHIBIT 4).

**Factor level diversification: Quality vs. quantity**

A larger number of factors improves a smart beta portfolio, all else equal. However, as with other diversification strategies, the greater the number, the more likely it becomes that the portfolio extends beyond “best ideas” and dilutes the quality and reliability of the factors, on average. Ideally, a portfolio contains a focused set of premia, each with a strong established economic explanation (or in some cases multiple complementary explanations), supported by rigorous empirical research (EXHIBIT 5, next page). The key to diversification at the factor level is to identify factors with low correlation to the market and to one another. It is from this combination that the diversification benefit arises. For example, incorporating a quality factor based on the risk of default on equal terms alongside a low beta factor would result in poor diversification since the two are strongly correlated. By contrast, quality pairs very well with value, since we might expect high quality stocks to attract higher valuations, on average.

**The passive investor’s free lunch: Combining multiple sources of diversification can lead to portfolios that have exposure to more premia while avoiding concentration of risk**

EXHIBIT 5: CUMULATIVE RETURNS



	FTSE Developed Index	FTSE Developed Diversified Factor Index
Annualized return (%)	7.0	11.1
Annualized volatility (%)	16.3	14.3
Sharpe ratio	0.32	0.64
Monthly VaR 5% (%)	8.5	7.0

Source: FTSE, J.P. Morgan Asset Management; data as of April 30, 2014.

\*100 = index value on February 28, 2001.

Index inception date is March 20, 2001. Index history returns calculated using monthly data.

**BETA FOR THE NEXT DECADE**

It is tempting, as systematic investors, to focus on backward-looking metrics of a portfolio’s performance. We can, however, also look ahead and suggest possible features of the beta landscape going forward. The first and most important is perhaps the persistence of the compensation earned by premia. Against a backdrop of factor proliferation and conflicting explanations of historical outperformance, it is worth noting the sufficient condition for a premium to persist over a long investment horizon: If a factor embodies risk that the bulk of investors cannot, will not or should not accept, it is likely to be compensated over a long enough horizon. These limitations rely, in turn, on explanations based on the behavioral features of investment decision making, risk aversion and structural constraints such as index definition and conditions imposed by particular investment mandates. Investors who hold such premia through market cycles, without being drawn into fads or away from their beliefs by bumps in the road, are likely to profit.

The growth in popularity of smart beta should not thus lead to the elimination of premia, though it may in any given season lead to crowding in the flavor of the month. One potential longer term impact may occur in the correlation among premia. As factor-based investing becomes established as a style and draws in more assets, the individual premia will see a greater fraction of their flows come at the same time.

The resulting price action will most likely lead to higher correlations than we have seen in the past. This does not take away from the fact that factors give investors an additional dimension along which to diversify. Just as globalization has led to the reduction but not elimination of regional diversification in portfolios, so too will the continued march of smart beta reduce but not eliminate the diversification among premia.

**DIVERSIFIED EQUITY PORTFOLIOS**

What we advocate in this paper is the pursuit of diversification at every available opportunity. Equity allocations should be built with a view to allocate to independent, minimally correlated premia wherever possible. They can and should be built not only to access multiple compensated premia but also to be mindful of risk in every dimension that an investor is aware of. What results is an allocation that balances all known risk and maintains diverse sources of return. This bears the hallmarks of passive investment in that it is repeatable, transparent and cheap to access. With sufficiently careful process design, it can also be made scalable with low turnover. The evolution of beta takes a step forward, and the bar is raised for active managers once again.

## INVESTMENT INSIGHTS

## J.P. MORGAN ASSET MANAGEMENT

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