

Designing Smart Beta Portfolios: Challenges and Considerations

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Increasingly popular Smart Beta products provide investment managers and asset owners with conveniently packaged exposure to a number of factors. Risk factors are granular attributes of one or more asset classes that explain risk and return. Examples of equity factors are company size (large cap vs. small cap) and style (growth vs. value). Fixed income factors

include interest rate, credit and prepayment risk. Factors can also include macroeconomic variables such as inflation, GDP growth, productivity, and commodity prices that impact multiple asset classes.

Constructing portfolios based on established, well-researched factors, rather than asset classes, can theoretically improve portfolio diversification, minimize undesirable correlation risk, and deliver better risk-adjusted performance.

This article discusses the benefits of Smart Beta relative to traditional active and passive strategies, and outlines the underlying implementation methodology and attendant challenges.

A future Bobsguide article will discuss the role of factor models and optimization in constructing Smart Beta products and portfolios, and describe how these capabilities fit into a buy-side portfolio and risk technology framework.

Understanding Smart Beta

Smart Beta is based on the notion that investors are not compensated for investing in assets, but rather for assuming risks. These risks are categorized as either systematic factor risk or idiosyncratic security-specific risk. Systematic factor risk can be measured, targeted and “harvested” using specific investment strategies. While hundreds of factors have been identified, not all factors produce consistent, positive returns.

Active, passive and Smart Beta strategies

Smart Beta incorporates aspects of both passive and actively managed funds, providing investors with a reasonably priced product that offers both diversification and attractive risk-adjusted returns.

Passive funds mechanically replicate a market index. Trading and portfolio management is required only for periodic index rebalancing and to reflect investor inflows/redemptions. Since the fund mirrors publically available index constituents, transparency is high and fund capacity is nearly unlimited. Given the lack of turnover and value-added management, these funds can offer attractive investment fees.

Active funds attempt to generate excess returns against a benchmark, requiring significant portfolio management and trading expertise. This results in higher fund turnover and operating costs. Since active management involves proprietary strategies, transparency and capacity is constrained. Information leakage and strategy crowding can also limit the longevity of profitable strategies. To compensate for their overhead and reward excess returns, active managers can command higher fees than passive funds, though fees are increasingly under pressure after years of subpar performance.

Smart Beta funds incur more trading and turnover than passive funds since they rebalance across multiple factors, but turnover is well below active funds. Since Smart Beta is rules-based, minimal portfolio management expertise is required. Given their moderate overhead, fees more closely align with passive than active funds.

	<i>Passive</i>	<i>Smart Beta</i>	<i>Active</i>
<i>Constituent turnover</i>	Low	Moderate	High
<i>Portfolio management required</i>	Low	Moderate	High
<i>Capacity</i>	Nearly unlimited	Constrained by liquidity of underlying factors	Limited to minimize price impact
<i>Fees</i>	Low	Moderate	High, increasingly under pressure
<i>Transparency</i>	Significant	Moderate	Minimal

The following table summarizes key differences between the three approaches:

Smart Beta implementation

Implementation of Smart Beta products follows a standard methodology:

- a) Decide which asset class(es) and factor(s) the Smart Beta product will be based on
- b) Determine which tradeable asset type(s) to incorporate – typically stocks and bonds, but can also include ETFs and derivatives
- c) Define the universe of eligible CUSIPs or ISINs. This can be based on a particular country, currency or sector, for example, European mid-cap stocks
- d) Select or create a factor model appropriate to the asset class and select one or more its factors. Multifactor products are gaining in popularity, based on the fact that most factors have low correlations. Incorporating multiple factors can therefore improve the risk/reward profile of the portfolio.
- e) Rank each CUSIP or ISIN by its corresponding factor exposure, and select a subset using the top “x” percent. Strategies that permit short sales would also sell short the bottom “x” percent
- f) Perform mean variance optimization on this subset to determine the weights of each CUSIP in the final portfolio. This requires constraints to be defined, such as whether leverage and short sales are allowed, and selection or construction of an appropriate factor model
- g) Construct the Smart Beta portfolio using the weights generated via optimisation
- h) Rebalance the portfolio at some predetermined interval, typically every quarter

Implementation challenges

While the majority of academic and institutional Smart Beta research has focused on equities, any asset class can be viewed through the lens of risk factors. A number of fixed income ETFs have been launched, built on factors such as duration, momentum and credit worthiness. This is a common sense alternative to passive fixed income funds that are weighted towards highly indebted issuers. A few FX offerings have also launched, exploiting carry, momentum and valuation factors. ETF providers are also offering multi-asset class products targeting factors such as inflation, interest rate and liquidity risk that impact a range of asset classes.

While Smart Beta shows promise at producing better risk adjusted returns than cap-weighted products, it's not a panacea. Both practical and theoretical challenges exist to implementing Smart Beta products.

Data mining bias

With hundreds of documented factors, both academics and practitioners increasingly warn of data mining bias. The combination of cheap computing power and lack of robust strategy evaluation and back testing can uncover spurious patterns that appear historically profitable, and then fail to hold up once implemented as Smart Beta products. Researchers caution that potential factors must be underpinned by a plausible economic rationale. Even then, past performance doesn't guarantee future profitability, especially if products based on the strategy outstrip liquidity and capacity constraints.

Historical persistence

Returns from any investment strategy are impacted by economic and market conditions, and factor-based strategies that outperform during one part of the market cycle may underperform in another, sometimes for many years. And unlike traditional buy and hold strategies, Smart Beta has a relatively short track record from which to construct statistically robust track records. Furthermore, there is no guarantee that a factor will continue to generate positive risk adjusted returns in the future, either due to structural changes or “crowding”, as the amount of assets invested in a factor strategy outstrips market capacity.

Investable proxies

Considerable latitude exists in how best to incorporate a particular factor into a portfolio, using methods ranging from straightforward to difficult. For example, to gain exposure to real interest rates, a manager can simply buy the Barclays TIPS Index. Gaining exposure to GDP on the other hand, is virtually impossible.

Firms designing Smart Beta products that offer exposure to a particular factor need to consider three issues. First, not every factor has an investable proxy. GDP and productivity fall into this category. Secondly, indexes and ETFs that serve as proxies have to be deep and liquid enough to handle institutional-scale investment flows. Thirdly, some factors have to be implemented using derivatives or long/short positions to capture a spread. This can be problematic for institutions constrained by long-only mandates or firms lacking derivative expertise.

Asset class specific challenges also exist. Liquidity constraints, high transaction costs and sparse pricing data impact the fixed income market. The lack of historical pricing makes it difficult to research and back test potential Smart Beta strategies, undermining investor confidence in their validity.

Leveraging the benefits of Smart Beta

Smart Beta products are gaining widespread acceptance, underscored by rapidly growing AUM and the number of new product offerings. This article discussed the implementation methodology and challenges faced by asset owners and investment managers seeking to leverage the benefits of Smart Beta.

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