The Art and Science of Smart Beta Investing

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The rise of data and technology
The art of investing is becoming the science of investing

Transforms our lives at work and at home

- Computing power and breadth of data democratizes information
- Expands the range of outcomes
- Captures proven drivers of return

Redefining passive investing

Smart Beta
**Smart Beta landscape today**

Source: BlackRock, SimFund. ETP flows as of June 2015

<table>
<thead>
<tr>
<th>Smart Beta Product</th>
<th>Annual Asset Growth</th>
<th>YTD Flows ($23.1bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Income</td>
<td>20%</td>
<td>0.3</td>
</tr>
<tr>
<td>Single Factor</td>
<td>55%</td>
<td>3.5</td>
</tr>
<tr>
<td>Minimum Volatility</td>
<td>132%</td>
<td>5.9</td>
</tr>
<tr>
<td>Equal Weight</td>
<td>40%</td>
<td>5.2</td>
</tr>
<tr>
<td>Multi-Factor</td>
<td>58%</td>
<td>7.1</td>
</tr>
<tr>
<td>Dividend</td>
<td>28%</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Global Smart Beta Assets:
- **$1bn**
- **$21bn**
- **$24bn**
- **$39bn**
- **$50bn**
- **$120bn**

Dec'11 to Jul'15 Growth:
- **Dividend**
- **Multi factor**
- **Equal weight**
- **Minimum volatility**
- **Single factor**
- **Fixed income**
Smart Beta growth is global

Global growth is strong across geographic regions

**Average annual organic growth rate***

<table>
<thead>
<tr>
<th>Region</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>27%</td>
</tr>
<tr>
<td>Europe</td>
<td>41%</td>
</tr>
<tr>
<td>Canada</td>
<td>34%</td>
</tr>
<tr>
<td>APAC</td>
<td>35%</td>
</tr>
<tr>
<td>LatAm &amp; Iberia</td>
<td>21%</td>
</tr>
</tbody>
</table>

**Share of assets by listing region and category**

- **U.S.**
  - Dividend: 45%
  - Equal weight: 32%
  - Minimum volatility: 14%
  - Multi factor: 7%
  - Single factor: 2%
  - Fixed income: 3%

- **Europe**
  - Dividend: 58%
  - Equal weight: 20%
  - Minimum volatility: 17%
  - Multi factor: 3%
  - Single factor: 2%
  - Fixed income: 4%

- **Canada**
  - Dividend: 49%
  - Equal weight: 35%
  - Minimum volatility: 15%
  - Multi factor: 1%
  - Single factor: 1%
  - Fixed income: 4%

- **APAC**
  - Dividend: 68%
  - Equal weight: 15%
  - Minimum volatility: 6%
  - Multi factor: 1%
  - Single factor: 2%
  - Fixed income: 8%

- **LatAm & Iberia**
  - Dividend: 47%
  - Equal weight: 25%
  - Minimum volatility: 18%
  - Multi factor: 1%
  - Single factor: 1%
  - Fixed income: 8%

*Since 2012 including YTD July 2015 annualized
When it comes to Smart Beta… what matters most?

Despite all the machines… many human choices are required

- Factor exposures matter
- Portfolio construction matters
- Implementation matters
Factors are broad, persistent drivers of return

Factors are the fundamental building blocks of investment returns

Nutrients
- Fiber: 65%
- Protein: 25%
- Carbohydrates: <1%
- Fat: 10%
- Sodium: >1%

Risk Factors
- Interest Rates: 120 bps
- Credit Spreads: 75 bps
- Inflation: 53 bps
- Economic Growth: 620 bps
- Currency / FX: 12 bps

Understanding drivers of market returns allow investors to build more diversified portfolios and make better investment decisions

Understanding the nutritional content drives decisions around what foods you eat

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Macro risk factors
Non-diversifiable risks that have exhibited a positive expected return over longer periods
- Economic
- Credit
- Inflation
- Real rates
- Liquidity
- Emerging Markets

Style risk factors
Have historically delivered return premium over long term – capturing a risk premium, behavioral anomaly or structural impediment
- Value
- Momentum
- Quality
- Size
- Low Volatility
- Carry
- Curve

Alpha
Returns only consistently positive for managers with skill
- Security selection
- Country and industry selection
- Market and factor timing

Sources of potential returns

Smart Beta Factors

Factor-based investing is focused on allocating to risk instead of capital to fundamental drivers of returns instead of asset classes or securities
Factors see through asset classes and methodology rules

- Three different sounding strategies have very similar style exposures

Source: BlackRock Fundamental Equity Risk Model, as of 7/31/2015
Value is persistently rewarded over the long term…
but variants differ widely

Source: MSCI, Bloomberg, BlackRock. As at the end of Mar-2015. Based on US$ denominated net total return indices. Index values have been re-based to 100 as at 1-Jan-2001. Past performance is not an indicator of future results.
Implementation matters

Even S&P 500 Index portfolio results can vary widely across managers

Returns through Q4 2014 – 3 Yr, 5 Yr, and 10 Yr returns are annualized
Source: eVestment. Gross of fees for all managers. BLK, BNYM, and NT are reporting with CTFs (of which only BLK reports ERISA), whereas SSgA and Vanguard are reporting with mutual funds. BLK, BNYM, and SSgA include securities lending, whereas Vanguard doesn’t and NT is N/A.
Smart Beta can help achieve a specific outcome

Today’s market challenges:

- Low yields and modest expectations for forward returns increase pressure to generate incremental returns
- Investors demand “smoother ride” in an environment of market divergence and rising equity market volatility
- Concerns about interest rate risk and its impact on bond portfolios

Complement index equity exposure with return-seeking smart beta strategies

Complement index equity allocation with minimum volatility strategies

Complement core fixed income with diversified smart beta FI strategies

Source: MSCI: Equity smart beta is represented by the MSCI US Diversified Multi-factor Index. Annualized 10 year risk and return for combinations of MSCI USA Index and MSCI US Diversified Multi-factor through 12/31/2014.

Source: Morningstar. Based on monthly index returns from 12/1/09 – 12/31/14. MSCI USA MV Index incepted: 5/30/08, all other MSCI MV Indices above incepted: 11/30/09.

The FIBR Strategy Target for illustrative purposes only. *Using monthly Barclays Index Data between August 1988 and December 2014, interest rate risk was 92% of the Agg’s total risk. Excess returns were used to proxy spread risk. Total Returns – Excess Returns were used to proxy interest rate risk. Using the same dataset but running a one-factor regression against the Agg’s total returns resulted in a beta of 90% with an R-squared of 89%.
A lens for manager analysis

Investment Return Composition

Smart Beta accounts for a significant portion of active risk budgets

- On average, for 35% of active strategies, more than half of active risk was explained by factors.
- In a multi-manager analysis (random selection of 10), 55% of aggregate portfolios had half of their active risk explained by factors, since smart beta returns are correlated across funds while pure alpha returns are not.

Investors need pure alpha from active managers

- Smart beta is increasingly available at lower cost.

Source: BlackRock, eVestment 4/11 to 3/14. Global Equity data includes all 138 actively global equity strategies included in the eVestment database. See the BlackRock manuscript “Smart Decisions about Smart Beta”, by Kahn and Lemmon, September 2014. Four Smart Beta Factors were Market, Size, Value, and Momentum.

*This represents all global equity funds that are tracked in eVestment from 4/11 to 3/14.
What does the future look like?

- Factor-based investing empowers investors
  - The construction and evaluation of smart beta – and all strategies – will increasingly be based on a factor-based view of the world
    - Increasing recognition of factors as a source of return, and factor-based investing as a style of investing
    - Manager success evaluated through this lens
    - Asset allocation will become more factor aware

- Directly targeting broad, persistent drivers of returns may allow investors to achieve better outcomes
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