PIMCO RAIII Dynamic Multi-Factor ETFs: Innovation in Smart Beta

The smart beta and factor landscape has exploded in recent years. Academics have identified an ever-expanding list of equity factors that may explain excess returns when applied to broad systematic portfolios, and exchange-traded fund (ETF) providers have launched a variety of strategies that seek to harness and package them. But how can investors gauge whether these strategies, and the factors underlying them, make economic sense and are positioned to produce results over time?

In this Q&A, PIMCO equity strategist Raji Manasseh and Research Affiliates product specialist Brent Leadbetter discuss the process behind factor selection and portfolio construction for the PIMCO RAIII Dynamic Multi-Factor ETFs and the inputs informing factor weightings.

Q: HOW CAN INVESTORS BENEFIT FROM THE RAIII APPROACH?

A: Equity factors should be chosen carefully: Only a handful of the hundreds of factors identified to date are likely to persist in the future, in our view. For this reason, Research Affiliates’ equity factors are grounded in academic-quality research and subject to publication in peer-reviewed journals. These factors are designed with an eye toward simplicity, transparency, a sound economic rationale and reduced transaction costs. We believe applying this approach in the PIMCO RAIII Dynamic Multi-Factor ETFs leads to efficient implementation of a select subset of robust, persistent and pervasive factor portfolios. Finally, by pairing a valuation bias with momentum, our ETFs seek to avoid buying cheap factors too early and selling appreciating factors too soon. We believe this combination gives investors the potential for higher returns with a smoother ride.

Q: HOW DID YOU DETERMINE WHICH FACTORS TO INCLUDE IN THE RAIII DYNAMIC MULTI-FACTOR ETFs?

A: Research Affiliates is skeptical of many in the expanding array of equity factors and questions the economic rationale behind some seemingly far-fetched – yet published – factors said to generate a premium (the “creativity in stocks’ ticker symbols” factor comes to mind). However, we do believe a combination of a small subset of thoughtfully constructed portfolios based on factors with a sound economic rationale, grounded in academic-quality research, may offer the potential for excess returns with modest tracking error.

Research Affiliates identified five equity factors – value, quality, low volatility, momentum and size – that we believe meet these criteria. Working together, PIMCO and Research Affiliates combined these factors into a cohesive multi-factor ETF strategy that favors the factors that we believe appear to be...
most attractively positioned for future excess returns (as measured by a combination of value and momentum signals). We then packaged this strategy in the three PIMCO RAFI Dynamic Multi-Factor ETFs, each focused on a different region (U.S., international and emerging markets).

**Q: HOW DO YOU CONSTRUCT THE FACTOR PORTFOLIOS?**

**A:** Construction of the PIMCO RAFI Dynamic Multi-Factor ETF portfolios begins with the Research Affiliates Fundamental Index (RAFI) Global Equity universe. We measure companies according to their RAFI fundamental measures of relative size – sales, cash flow, dividends and book value. The top 86% by cumulative fundamental weight make up the large-company universe, from which we create four distinct factor portfolios: value, quality, low volatility and momentum. The remaining 14% are used in the size factor portfolio.

**Figure 1:** Five key factors drive the RAFI Dynamic Multi-Factor ETFs

- **The value portfolio** selects the top companies in terms of their RAFI fundamental size/market capitalization ratio. Under this method, companies with the greatest disconnect between their fundamental size and their market capitalization (i.e., the highest ratio) exhibit the strongest value signal. We believe this approach provides more diversified exposure to value than a single metric, such as the price-to-book ratio.

- **The quality portfolio** selects the top companies as measured by both profitability and the degree of conservative investment. Again, we believe this combination provides a more robust solution than one relying on a single metric. Weighting companies based solely on their profitability, for instance, would ignore whether firms’ management teams may have wasted those profits on excessive reinvestment (e.g., in the form of empire-building).

- **The low-volatility portfolio** selects companies with the lowest volatility as measured by sector-level, regional and global betas. Diversifying across multiple measures of beta seeks to reduce persistent biases to individual sectors or countries.

- **The momentum portfolio** selects high-momentum stocks using three distinct measures: standard momentum, beta-adjusted momentum and “fresh” momentum (referring to outperformance that has just begun). We believe companies exhibiting fresh momentum are more likely to outperform those with "stale" momentum – those that have outpaced the market for multiple years and may be running out of steam.

- Finally, we build the **size portfolio** using an equally weighted combination of the first four factors across the small company universe described above (the smallest 14% of companies, as measured by fundamental size).

We weight stocks in the individual value, quality and low-volatility factor portfolios according to each company’s fundamental size (again, as measured by its sales, cash flow, dividends and book value relative to the market’s aggregate size). We believe this approach differentiates the RAFI portfolios from most other factor ETFs, which we observe tend to weight stocks by market cap. The RAFI approach allows us to keep the liquidity of the portfolios high (i.e., larger companies get larger weights) while breaking the link between price and weight. This introduces a “buy low/sell high” dynamic within the factor portfolios themselves. One exception: We weight stocks in the momentum factor portfolio by market cap to prevent RAFI’s inherently contrarian rebalancing from reducing the exposure to momentum.

**Q: HOW DO YOU ASSIGN WEIGHTS TO THE FACTOR PORTFOLIOS?**

**A:** Research Affiliates’ factor weighting methodology offers another point of differentiation, in our view: While most multi-factor strategies equally weight their factor exposures, we dynamically weight factor exposures over time based on relative value and momentum. While some may view this approach as controversial, we believe incorporating valuation into the weighting of factors is no different from the role valuation typically plays when investors allocate to other assets, such as individual stocks, sectors and countries. Any asset can become relatively cheap or expensive, and we believe future returns are conditional on starting valuations. We recognize that a dynamic allocation based solely on valuation has the potential to trade too early, buying cheap factors before they become even cheaper and selling appreciating factors before they appreciate further. Therefore, we also incorporate momentum when determining the dynamic factor weights in our strategies.

We use what is called “reversal” – returns over the past five years, excluding the most recent year – as a proxy for factor valuations in our calculation (see Figure 2). We believe a factor that has been beaten up for four years relative to other factors is likely relatively cheap (and vice versa). We also use standard momentum – returns over the past year, excluding the most
recent month – as an indication of a factor’s recent turnaround. Looking at the two components together, we would generally consider a relatively cheap factor that is in the midst of a turnaround to be an attractive factor to overweight.

**Figure 2: Dynamic factor weighting in action**

Factors that have *underperformed* for four years and recently outperformed are likely to be *overweighted*.

Factors that have *outperformed* for four years and recently underperformed are likely to be *underweighted*.

Figure 3 shows how this approach translated to factor weights at the most recent quarter-end (31 December 2018) in the RAFI Dynamic Multi-Factor U.S. Equity ETF (MFUS). The value portfolio exhibited the worst return over the four years preceding the most recent one (2014–2017), suggesting it may be inexpensive today. However, its recent momentum was also poorer than that of the other portfolios, suggesting that the underperformance could continue. The combination led to a weighting below the baseline 20% equal-weight position.

Conversely, the momentum factor was the strongest performer during the four years preceding the most recent one, and while it is perhaps relatively expensive versus other factors, its recent continued outperformance resulted in an overweight.

**Figure 3: RAFI Dynamic Multi-Factor U.S. Equity ETF factor weights**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (%)</th>
<th>Quality (%)</th>
<th>Low volatility (%)</th>
<th>Momentum (%)</th>
<th>Size (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5 to -1 years</td>
<td>9.0%</td>
<td>12.3%</td>
<td>12.3%</td>
<td>12.7%</td>
<td>9.5%</td>
</tr>
<tr>
<td>-12 to -1 months</td>
<td>1.6%</td>
<td>4.2%</td>
<td>4.8%</td>
<td>6.0%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Weight</td>
<td>18.2%</td>
<td>19.5%</td>
<td>17.7%</td>
<td>24.4%</td>
<td>20.2%</td>
</tr>
</tbody>
</table>

Source: Research Affiliates as of 31 December 2018

Factor return trends in international equity markets led to different allocations for the RAFI Dynamic Multi-Factor International Equity ETF (MFIX). As Figure 4 shows, the size portfolio received the smallest weight because it simultaneously exhibited the highest returns over the four years preceding the recent one (indicating it is richly valued) while experiencing the worst return of any factor over the past year (suggesting its dominance has waned and may continue to decline over the short run). Conversely, the low-volatility portfolio received the highest weight because its recent price momentum has been far stronger than that of any other factor.

**Figure 4: RAFI Dynamic Multi-Factor International Equity ETF factor weights**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (%)</th>
<th>Quality (%)</th>
<th>Low volatility (%)</th>
<th>Momentum (%)</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5 to -1 years</td>
<td>7.4%</td>
<td>6.9%</td>
<td>8.4%</td>
<td>5.8%</td>
<td>24.4%</td>
</tr>
<tr>
<td>-12 to -1 months</td>
<td>-9.8%</td>
<td>-9.0%</td>
<td>-3.3%</td>
<td>-10.1%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Weight</td>
<td>19.0%</td>
<td>20.3%</td>
<td>24.9%</td>
<td>22.6%</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

Source: Research Affiliates as of 31 December 2018

Finally, disparities in factor portfolio weights for the RAFI Dynamic Multi-Factor Emerging Markets Equity ETF (MFEM) reflected distinct market dynamics in the recent quarter (see Figure 5). We note that Research Affiliates does not include a size factor portfolio in emerging markets due to implementation and liquidity limitations and generally avoids small companies in these regions, which tend to be more expensive to trade than their developed market peers. Therefore, a factor’s baseline equal-weight position is 25%.

Perhaps ironically, the momentum portfolio received the smallest weight, in large part because the factor itself had the poorest momentum over the past year. The quality portfolio, which recorded the weakest returns over the four years preceding the most recent one, received the largest weight, primarily because these results indicate its relative cheapness.

**Figure 5: RAFI Dynamic Multi-Factor Emerging Market Equity ETF factor weights**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (%)</th>
<th>Quality (%)</th>
<th>Low volatility (%)</th>
<th>Momentum (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5 to -1 years</td>
<td>9.2%</td>
<td>3.8%</td>
<td>6.4%</td>
<td>8.3%</td>
</tr>
<tr>
<td>-12 to -1 months</td>
<td>-7.4%</td>
<td>-10.0%</td>
<td>-11.9%</td>
<td>-12.8%</td>
</tr>
<tr>
<td>Weight</td>
<td>23.7%</td>
<td>31.5%</td>
<td>25.9%</td>
<td>18.9%</td>
</tr>
</tbody>
</table>

Source: Research Affiliates as of 31 December 2018

All told, we believe our dynamic approach to factor weighting, applied to a select subset of robust factor portfolios, contributes to higher return potential while helping smooth the path for investors.

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1 Cam Harvey, one of Research Affiliates’ academic advisors and partners, has documented this explosion in identified factors and the number of offerings. See “... and the Cross-Section of Expected Returns,” 3 February 2015, co-written with Yan Liu and Caroline Zhu.
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