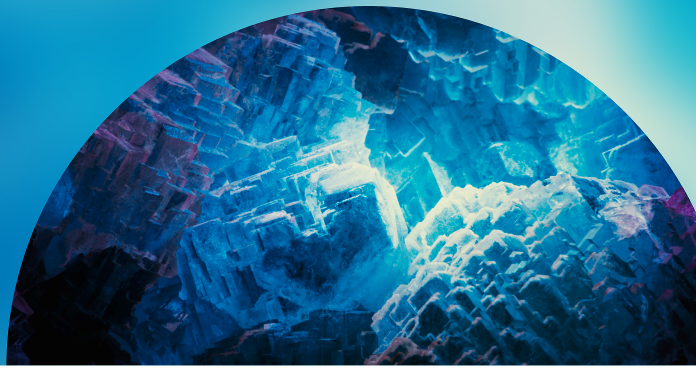
METHODOLOGY OVERVIEW

FTSE Invesco Dynamic Multi-factor Index Series



Overview

The FTSE Invesco Dynamic Multi-factor Index Series uses a rules-based framework to target exposure to low volatility, momentum, quality, size and value factors. Invesco Funds use economic and market sentiment indicators to identify four regimes corresponding to different parts of the business cycle: Recovery, Expansion, Slowdown and Contraction. The FTSE Invesco Dynamic Multi-factor Index Series will emphasize exposure to these factors by allocating to one of four predetermined multi-factor indices, according to the Invesco economic regime signal ('Signal'). These multi-factor indices target a combination of factors that have historically outperformed other factors in these stages of the business cycle.

Invesco Economic Regimes

Recovery | Expansion | Slowdown | Contraction

FTSE Russell Factors

Value | Size | Quality | Volatility | Momentum

Features

- The FTSE Invesco Dynamic Multi-factor Index Series diversifies across equity risk premia factors according to the economic environment and overall financial market conditions. The Invesco proprietary economic regime model generates a 'Signal' that identifies which predetermined multi-factor index will be tracked.
- Utilizing FTSE Russell's innovative 'Tilt-Tilt' multi-factor methodology, the underlying regime-driven multi-factor indices achieve greater factor exposure in a more controlled manner, while balancing concerns around diversification, liquidity and capacity.
- The FTSE Invesco Dynamic Multi-factor Indices are reviewed monthly according to the Invesco economic regime model and the underlying multi-factor indices are reviewed semi-annually in June and December.

Available Indices:

- Russell 1000® Invesco Dynamic Multi-factor Index
- Russell 2000® Invesco Dynamic Multi-factor Index
- FTSE Developed ex US Invesco Dynamic Multi-factor Index
- FTSE Emerging Invesco Dynamic Multi-factor Index

The factors

A factor is a stock characteristic that is important in explaining a security's risk and return. The FTSE Invesco Dynamic Multi-factor Index Series includes four underlying multi-factor equity indices which have been designed to target a combination of factors that have historically outperformed other factors in certain parts of the business cycle. FTSE Russell's factors represent common factor characteristics and are supported by a body of academic research and empirical evidence across different geographies and time periods.

Not all factors are equal

- The returns accruing to different equity risk premia factors vary according to the economic cycle and market environment. Some factors are uncorrelated, which means they may perform differently in different parts of the cycle. Therefore, combining factors offers the potential benefit of diversification.
- Factor-based investing is premised on the ability to identify factors that are expected to earn a premium (i.e. excess return over the market capitalization benchmark) over the long term.

Factor premia and definitions

Factor	Description	Definition	Factor Cyclicality
Value	**The Value Premium:** Stocks that appear undervalued tend to perform better than stocks that appear overvalued. **Value tilts:** Can help capture exposures at a reasonable price relative to their fundamentals.	Composite of cash flow yield, earnings yield and country relative sales to price ratio.	Pro-cyclical
Size	**The Size Premium:** Smaller stocks tend to demonstrate higher performance then larger stocks. **Size tilts:** Can help capture excess returns of smaller stocks relative to their larger counterparts.	Log of full market capitalization.	Pro-cyclical
Quality	**The Quality Premium:** Higher quality stocks tend to outperform lower quality stocks. **Quality tilts:** Can help capture stocks with the ability to consistently generate strong future cash flows, while limiting exposures to stocks that are unprofitable or highly levered.	Composite of profitability (ROA, change in asset turnover and accruals) and leverage.	Defensive
Low Volatility	**The Low Volatility Premium:** Stocks that exhibit low volatility tend to outperform stocks with higher volatility. **Low volatility tilts:** Can help capture stocks with a historically lower volatility profile relative to more volatile counterparts.	Standard deviation of 5 years of weekly local total returns.	Defensive
Momentum	**The Momentum Premium:** Stock performance tends to persist, either continuing to rise or fall. **Momentum tilts:** Can help capture stocks with strong recent performance, with the expectation that this will continue to produce short term excess returns in the future.	Cumulative 11 month return (12 previous months excluding most recent month).	Both – Momentum is considered a 'persistence' factor, meaning it can benefit from a continuation of past patterns of stock returns.

Multi-factor strategies and the power of diversification

There may be room in well diversified portfolios to shift focus from industry and country diversification to factor diversification. In the same way as different asset classes have distinct risk and return characteristics, the returns accruing to different equity risk premia factors can also be seen as distinct, varying according to the economic cycle and market environment (see Figure 1). For example, the Value factor is typically considered to exhibit pro-cyclical performance, performing strongly during periods of strong economic growth and higher risk appetite. In contrast, the performance of Quality is typically counter-cyclical.

The use of multi-factor indices has become increasingly popular as a diversification tool. Multi-factor indices are commonly used strategically, to target long-term sources of excess returns. This compares to single factor indices for which the payoff for exposure to any one factor is highly variable through the investment cycle.

Calendar year performance of Russell 1000 single factor, FTSE Invesco Dynamic Multi-factor and market cap indices.

Underlying Market Cap Index: Russell 1000. Ranked from highest index returns (top row) to lowest index returns (bottom row).

2007	2008	2009	2010	2011	2012	2013	2014	2015	20 16	2017	2018	2019	2020	2021	2022	2023
11.56%	-28.07%	41.73%	30.59%	16.10%	19.19%	45.40%	15.85%	6.13%	18.66%	28.07%	-2.01%	36.19%	26.32%	31.73%	-3.2%	31.9%
9.13%	-31.10%	35.57%	27.76%	11.06%	18.82%	36.60%	14.03%	3.06%	17.37%	26.61%	-2.43%	32.19%	24.65%	30.21%	-8.7%	26.5%
5.77%	-31.14%	28.43%	20.13%	8.46%	17.57%	36.38%	13.33%	2.69%	15.99%	22.83%	-2.68%	32.16%	20.96%	29.70%	-13.6%	21.9%
4.50%	-32.46%	26.72%	17.34%	8.46%	16.42%	33.58%	13.24%	2.11%	13.03%	21.69%	-4.39%	31.43%	20.92%	29.28%	-16.2%	21.3%
3.92%	-36.66%	24.90%	17.07%	2.28%	16.09%	33.11%	12.88%	0.92%	12.05%	20.00%	-4.78%	30.92%	16.39%	26.86%	-18.0%	18.4%
3.70%	-36.74%	22.44%	16.10%	1.80%	15.45%	31.66%	12.65%	0.04%	11.56%	19.74%	-4.93%	29.78%	13.65%	26.45%	-18.2%	18.4%
3.48%	-37.58%	17.85%	14.55%	1.50%	13.25%	29.61%	12.54%	-2.26%	10.71%	18.25%	-8.09%	29.03%	7.06%	25.20%	-19.1%	18.0%
1.99%	-37.60%	17.02%	11.83%	-1.17%	11.84%	28.60%	11.32%	-3.34%	7.94%	15.96%	-8.34%	25.41%	0.88%	22.80%	-21.4%	10.7%

Dynamic Multi-factor   Size   Volatility   Value   Momentum   Yield   Quality   Russell 1000

*Source: FTSE Russell. Data as of December 31, 2023. Figures are percentage index returns for each complete calendar. Past performance is no guarantee of future results. Returns shown may reflect hypothetical historical performance. Please see disclaimer page for important legal disclosures.

The factor index construction process

Step 1 Calculate factor scores

Raw factor data is calculated for each index constituent. These raw data points are transformed to a series of factor 'Z-Scores*', which standardize the units of measurement across various factors. Z-scores range from -3 to 3, with the average stock receiving a score of 0.

Step 1 Step 2 Translate scores to factor index weights

Factor Z-Scores are mapped to a positive range of numbers between 0 and 1 using the cumulative normal distribution.

Starting weights (generally market capitalization weights) are then 'tilted' by the factor score by multiplying the market cap weight by the factor score. In multi-factor indices, this process is repeated sequentially. The unadjusted weights which reflect the factor scores are then normalized to ensure final weights sum to 100%.

Market Cap Weight (%) x Factor Score 1 x Factor Score 2 x Factor Score n = Factor Index Weight (%)

Narrow the Index
Check index parameters
Rescale weights

For illustrative purposes only.

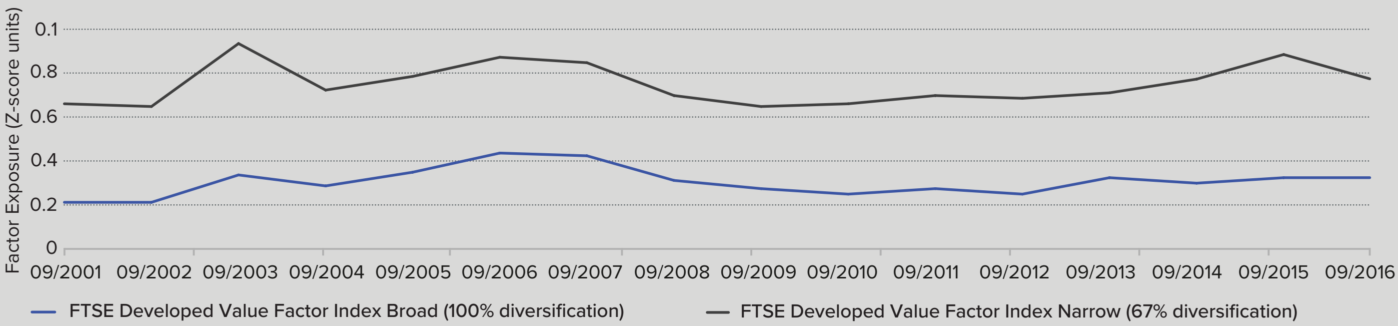
Step 1 Step 2 Step 3 Narrow the index and check index parameters

Narrowing* involves removing stocks that do not contribute materially to the factor index objective. Stocks are removed sequentially until any of the diversification parameters are breached. These include constraints related to diversification, capacity and exposure.

The final factor index is then checked against predefined index constraints related to industry and country bands, maximum capacity and minimum stock weights.

Why do we narrow?

Narrowing increases the factor exposure in the single or multi-factor index by removing stocks that do not contribute materially to the factor objective(s). These stocks are removed from the index while iteratively checking investability criteria such as exposure, capacity and diversification.



Source: FTSE Russell. Data as of September 30, 2016. performance is no guarantee of future results. Returns shown reflect hypothetical historical performance. See disclaimer page for legal disclosures. For illustrative purposes only.

1 A 'Z-Score' is a statistical measurement of a score's relationship to the mean in a group of scores. A Z-Score of 0 means the score is the same as the mean. A Z-Score can be positive or negative, indicating whether it is above or below the mean.

* Not all factor indices are narrowed. For example, those including the momentum factor are not narrowed owing to the unacceptable levels of turnover this would add to the factor index.

The factor combination process

Gaining exposure to multiple factors becomes increasingly challenging using allocations to multiple individual single factor indices. Targeting multiple factors can be achieved in several ways:

Composite index ('Top down' portfolio construction)

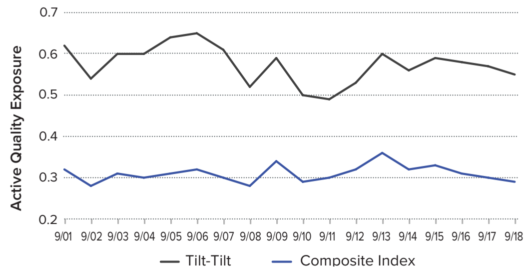
- Combine the weightings of individual factor indices (e.g. 33.3% value, 33.3% quality, 33.3% size).
- However, at times, this may result in a dilution of exposures to the target factors, particularly if the factors combined are negatively correlated, such as Value and Quality.

Tilt-Tilt index
('Bottom up' portfolio construction)
The FTSE Russell Approach

- Sequential, or 'multiplicative' tilts on each factor.
- Targets approximately the same exposures of single factor indices, without the dilutive effects of other methods.
- The magnitude of tilt(s) can be adjusted to address implementation concerns such as liquidity, capacity, diversification and turnover.

Tilt-Tilt improves factor exposure for positively corrected factors

FTSE Developed, Quality + Low Volatility Factor Index

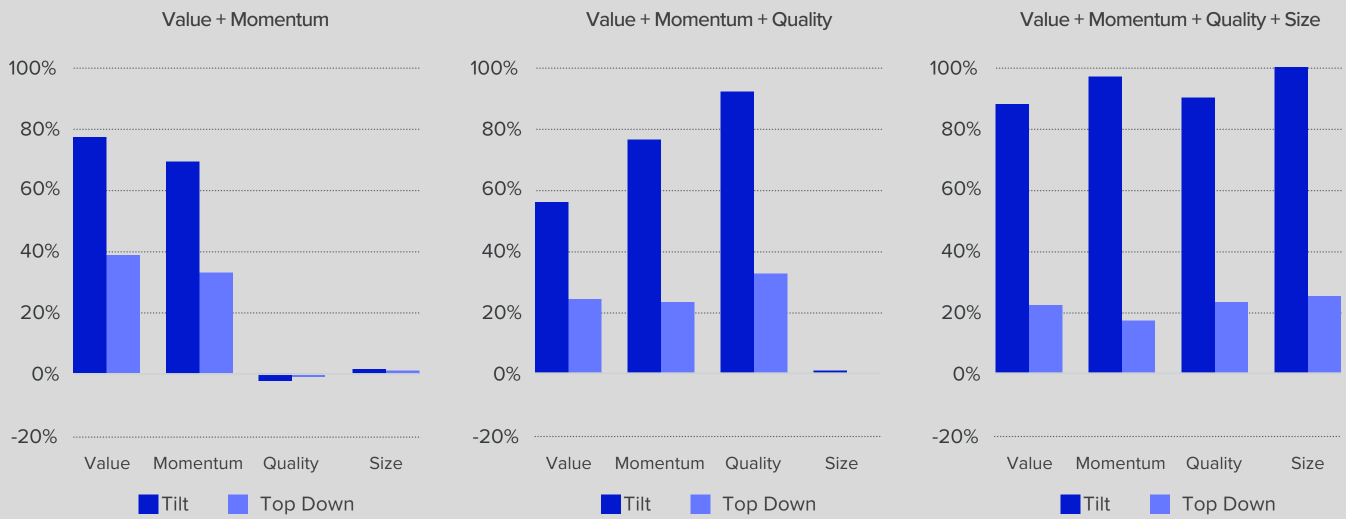


Source: FTSE Russell. Data from September 2001 to September 2018. Past performance is no guarantee of future results. Returns shown reflect hypothetical historical performance. See disclaimer page for legal disclosures. Chart shows active factor loading relative to the FTSE Developed Index, calculated using an annual rebalance frequency.

Avoiding Factor Dilution – Tilt vs. Top Down

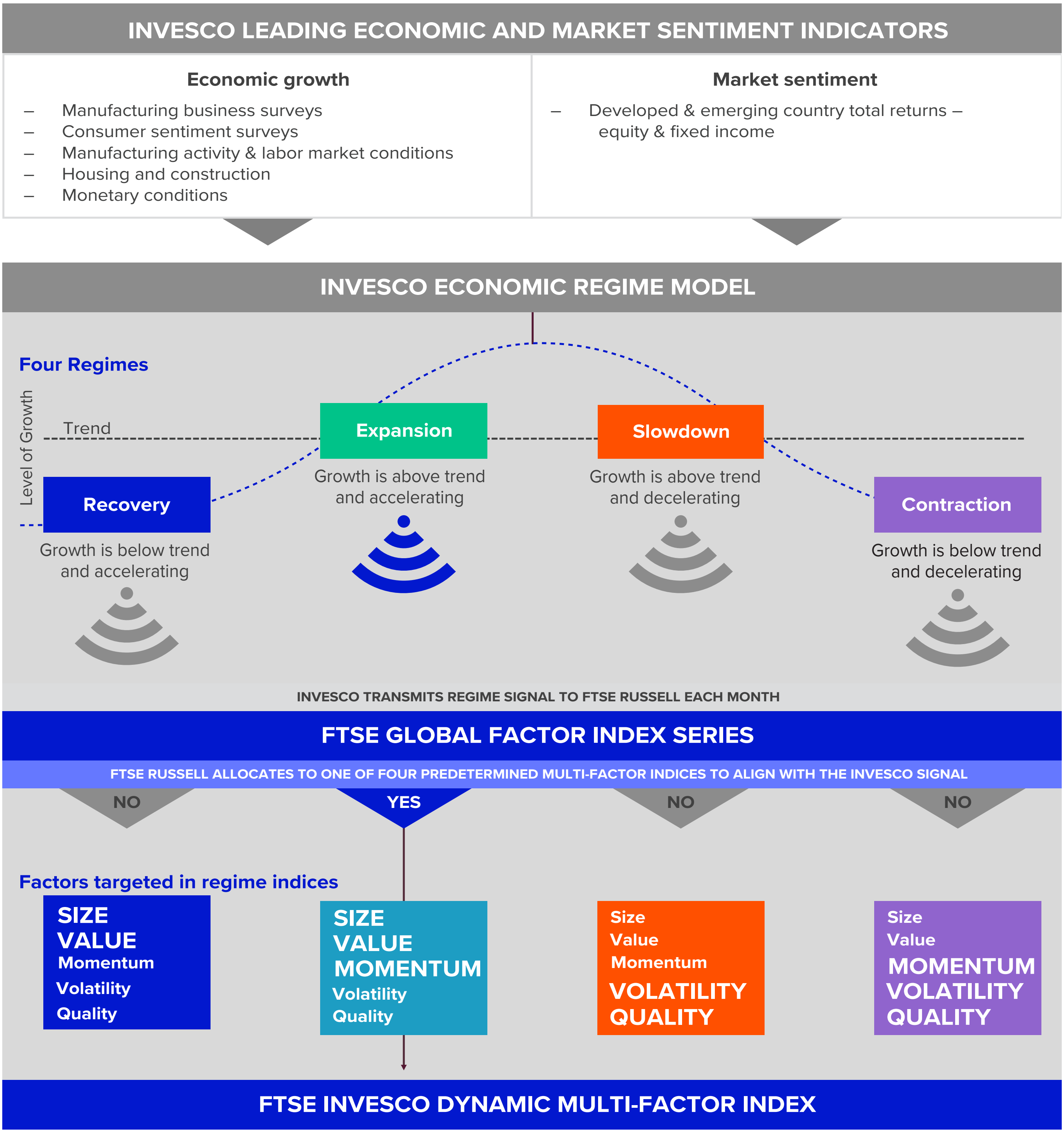
Illustration: Tilt more effectively preserved factor exposures as factors were added

Percent of Single Factor Index Active Exposure (Z-score)



Source: FTSE Russell, Analytics+. Exposures built using hypothetical Value, Momentum, Quality and Size single factor indices, Top Down composite and Tilt indices based on the FTSE Developed Index universe. Holdings used in the analysis are annual snapshots taken between September 2000 to September 2018. Average Active factor exposure is calculated by taking the difference between total factor exposures of the factor indices (single, top-down composite and tilt) versus the FTSE Developed market capitalization index. Past performance is no guarantee of future results. Please see the end of the presentation for important legal disclosures. For illustrative purposes only.

Index construction



For more information see the following methodology overviews:

FTSE Global Factor Index Series at http://www.ftse.com/products/downloads/FTSE_Global_Factor_Index_Series_Methodology_Overview.pdf

FTSE Invesco Dynamic Multifactor Index Series at http://www.ftse.com/products/downloads/FTSE_Invesco_Dynamic_Multifactor_Index_Series.

About FTSE Russell

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For over 35 years we have been at the forefront of driving change for the investor, always innovating to shape the next generation of benchmarks and investment solutions that open up new opportunities for the global investment community.

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