Implementation Considerations for Factor Investing

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Investors of large pension funds or insurance companies should care about factors. They are systematic drivers of portfolio risk and return and at the heart of risk management tools. Within smart beta, factor investing is the latest innovation in the field. These techniques aim to identify combinations of rewarded investment risk factors such as Value, Size or Quality that may be capable of improving levels of portfolio diversification, generating incremental performance relative to traditional market-cap indexes and/or reducing risk. Therefore, factor allocation should be part of an overall asset-allocation decision.

To facilitate the decision-making process, however, institutional investors need to develop a comprehensive understanding of the role factor investing can have in their portfolios.

Targeting specific outcomes

Asset owners can target specific portfolio outcomes with different combinations of factors. Factors may be categorised as cyclical or defensive, depending on their sensitivity to the economic cycle. Value, Momentum and Size are considered cyclical as they are more sensitive to economic growth and investor risk appetite. Low Volatility and Quality are typically considered defensive, meaning that they do well as investors become increasingly risk averse. Yield[1] factor exposure can enhance portfolio income.

Depending on the desired objective, cyclical and defensive factors may be combined to create more diversified portfolios that can perform relatively well during a range of market conditions. A Defensive portfolio can be designed to focus on providing some downside protection. A Diversified portfolio can be developed to achieve a modest risk-adjusted relative performance, while a Dynamic portfolio can be targeted to deliver a higher active return with potentially higher drawdowns.

An investor seeking to improve risk-adjusted returns with downside protection would likely favour the Defensive solution. As its up- and down-capture ratios illustrate in Table 2, the Defensive factor combination typically offers capital protection during market downturns, but also tends to appreciate less than the other two multi-factor combinations during market upturns. The Defensive solution also shows the lowest absolute risk, and the least amount of maximum drawdown – or the maximum loss from peak to trough, before a new peak is attained.

The Diversified solution seeks modest outperformance at market levels of absolute risk. As a result of its diversified properties, it has on average outperformed the other two combinations in both up and down markets. The beta of the Diversified solution is 0.96, versus 0.85 for the Defensive solution; in other words, it is more sensitive to market direction. The maximum drawdown for a Diversified solution is higher relative to the Defensive combination, but slightly lower than that of the benchmark index.

The Dynamic combination is the most aggressive of the three solutions, with a higher return (and risk) objective. Its higher level of volatility results in larger drawdowns. A long-term investment horizon and strong governance are essential to realising the potential of more risky factor combinations.

Table 1: Targeted Multi-Factor Solutions

Defensive	Low Volatility	Quality			
Diversified	Low Volatility	Quality	Value	Size	
Dynamic			Value	Size	Momentum

Table 2: Risk-Return Trade-Offs of Multi-Factor Combinations (October 2001–October 2017)

FTSE All World Indexes	Annualised Return	Standard Deviation	Sharpe Ratio	Maximum Drawdown	Beta	Up-Capture Ratio	Down-Capture Ratio
Defensive	9.6%	15.1%	0.55	-42.0%	0.85	91.6%	83.1%
Diversified	12.9%	17.1%	0.67	-50.0%	0.96	102.7%	82.8%
Dynamic	13.1%	18.6%	0.63	-54.3%	1.04	112.1%	94.9%
FTSE All-World	8.5%	17.4%	0.41	-51.6%			

Source: FTSE Russell. Data from October 2001 to October 2017. Past performance is no guarantee of future results. Factor indexes are hypothetical and for illustrative purposes only. Please see the full paper for important legal disclosures.

Applications for Institutional Investors

Each asset owner's investment objectives, constraints, investment horizon and governance is unique. Their specific set of investment concerns will determine the appropriate factor allocation. A pension fund, for example, may wish to use factors to improve risk-adjusted performance relative to its current passive allocation. Other plans may be more focused on downside protection during periods of heightened market volatility, while others may want to use a factor allocation to replicate the return potential of a style manager – say, a small-cap value manager.

In addition, an institution's investment board governance plays an important role in deciding the correct strategy. Strong governance often implies a greater robustness to and tolerance for downside risk and, consequently, the ability to manage periods of underperformance, in expectation of the rewards for long-term exposure to factor risk. The funding ratio of a pension fund will also influence its risk tolerance. For example, a fund in deficit will require a more conservative factor allocation than a well-funded pension scheme.

Factor allocation

The specific set of objectives and constraints will determine the appropriate factor allocation. It is important that an investor believes in the long-run persistence of factor risk premia. An investor looking to enhance risk-adjusted returns may seek a certain risk profile, and factor-investing can build relevant, outcome-oriented solutions. For example, the aim may be to have a strategy that offers a higher relative risk and return (Dynamic), or moderate risk and return (Diversified) or relatively low risk with moderate returns (Defensive).

Figure 1 provides an overview of these options, including some FTSE Russell Index products designed to capture these outcomes. The FTSE Russell factor index framework permits an extensive degree of customisation, spanning factor combinations, tracking error, capacity and turnover considerations.

Table 3 shows the characteristics for a sample of FTSE Russell indexes over the 16-year period ended October 2017. The varying performance characteristics of these select indexes underscores the importance of understanding the desired risk-return profile and tolerance for absolute losses in market downturns when choosing a multi-factor solution.

The FTSE USA Qual/Vol/Yield Factor 5% Capped Index shows its defensive properties, as demonstrated by its low historical up- and downside-capture ratios and MDD of -34%, versus -47% for the comparable benchmark. The Russell 1000® Low Volatility Focused Factor Index is also defensive in nature, highlighted by its relatively low historical downside capture. However, it also appreciated substantially more in up markets, resulting in a beta of 0.92 versus 0.74 for the FTSE USA Qual/Vol/Yield Factor 5% Capped Index. Consequently, its MDD was -42% compared

to -48% for its benchmark, the Russell 1000® Index.

Over the same period, the FTSE All-World Balanced Factor Index displayed a 2.2% p.a. outperformance compared to its benchmark, the FTSE All-World®, with slightly lower levels of risk. The FTSE Developed ex US Select Factor Index achieved a higher Sharpe ratio, resulting from improvements in return and reductions in risk versus its benchmark, the FTSE Developed ex US Index.

The Russell 1000 Comprehensive Factor Index captured more market upside over the period, with modest downside protection. Its market beta was 0.95 and MDD was -44.1% versus -48.1% for the Russell 1000® Index. The Russell 1000 Momentum Focused Factor Index has exposure to Quality, Value, Size and Momentum factors. The negative correlation between the factors helps to diversify risk, though overall volatility is higher than that of the overall market. As a Dynamic index, it tends to outperform in up markets but provides little or no downside protection.

Key Implementation Decisions

Once the set of desired factors has been determined, the final question for investors is how should the factors be implemented into an investment strategy? How can one ensure consistent exposure to the chosen factors? Achieving a diversified exposure to the target set of factors and to diversify away idiosyncratic risk entails making important trade-offs.

Tracking Error and Diversification

For a well-diversified portfolio, the relationship between active factor exposure, expected return and tracking error is approximately linear. Therefore, the contribution to information ratio (the active return over tracking error) of a particular factor remains relatively unchanged as exposure varies. It is crucial to achieve the desired factor exposure, while maintaining appropriate levels of stock-weight diversification to ensure potential factor pay-offs are not subsumed by idiosyncratic risk. Therefore, portfolio construction techniques that efficiently incorporate the factor exposure versus diversification trade-off are critical.

Figure 1: Multi-Factor Solutions

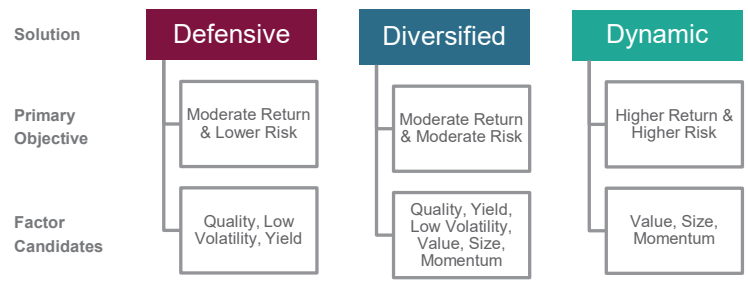

Table 3: FTSE Russell Indexes Performance Characteristics

FTSE All World Indexes	Annualised Return (%)	Standard Deviation (%)	Sharpe Ratio	Maximum Drawdown (%)	Beta	Up-Capture Ratio (%)	Down-Capture Ratio (%)
FTSE USA Qual/ Vol/Yield Factor 5% Capped	9.7	13.4	0.62	-34.3	0.74	83	69
Russell 1000 Low Volatility Focused Factor	13.7	16.1	0.76	-42.4	0.92	101	76
FTSE All-World Balanced Factor	10.7	16.1	0.58	-45.9	0.92	97	86
FTSE Developed ex US Select Factor	11.7	16.6	0.63	-48.8	0.87	96	80
Russell 1000 Comprehensive Factor	13.2	16.5	0.72	-44.1	0.95	103	82
Russell 1000 Momentum Focused Factor	12.8	18.1	0.63	-49.0	1.04	110	93
FTSE USA	8.6	16.6	0.43	-47.3	-	-	-
Russell 1000	8.7	16.9	0.44	-48.1	-	-	-
FTSE All-World	8.5	17.4	0.41	-51.6	-	-	-
FTSE Developed ex US	8.1	18.7	0.36	-54.2	-	-	-

Source: FTSE Russell. Data from October 2001 to October 2017. Past performance is no guarantee of future results. Returns shown prior to index launch reflect hypothetical historical performance. Please see the full paper for important legal disclosures.

Turnover

A large fund may want to limit turnover. This will affect the choice of factors. For example, Momentum exposures, driven by a stock's price, are typically less stable and need to be rebalanced more often, thereby increasing turnover. Factors calculated using balance-sheet data in combination with stock price will tend to show an intermediate speed of decay, while a pure financial statement-based factor, such as Quality, will typically need less rebalancing to preserve factor exposure and to capture any associated risk premium.

Investability

Investability is another constraint: a large investor will require greater capacity than a small asset owner, with implications for factor choice and desired levels of factor exposure. The funding ratio of a pension fund will also be a deciding factor in the desire to limit risk. Intentional exposure to the Size factor can be incorporated to enhance diversification. It is important to be aware of the difference between unintentional Size exposure, often observed in top-down models due to the weighting scheme employed in the underlying single factor indexes, and integrating a Size component directly and intentionally in a bottom-up approach.

Product Evaluation Criteria

Avoiding Off-target Exposures

Having navigated the process of selecting a set of factors that complements the asset-allocation decision and investment objectives, it is particularly important to limit or avoid exposure to off-target factors. Top-down approaches, especially those employing diversified weighting schemes, typically introduce a substantial and unspecified size bias. Proponents of a top-down approach often claim the resulting portfolio is more diversified compared to a portfolio constructed using a bottom-up approach. It is important to note this diversification is a result of unintentional Size exposure.

A bottom-up approach can incorporate a Size component directly and intentionally, leaving the investor with the choice and the flexibility to determine the desired trade-offs between exposure and diversification.

A common misconception with a bottom-up portfolio is that it is concentrated relative to a top-down portfolio. However, on a like-for-like comparison basis after matching factor exposures, bottom-up approaches show greater levels of diversification compared to top-down approaches[2].

A Flexible Approach

Each investor's unique return objectives, risk tolerances, investment horizons and governance will lead to different preferences regarding factors, levels of exposure and sensitivity to investment capacity, concentration and turnover. Investors may also have an increased interest in accommodating climate change and environmental, social and governance (ESG) considerations. When integrating ESG, carbon and factor considerations, each objective may pull the portfolio in a different direction.

Investors need to be observant of models and approaches that are regularly adjusted to meet with varying and changing needs. A successful factor-investing approach should be flexible and able to incorporate the desired trade-offs and investor preferences in a transparent, consistent and robust manner.

A copy of the full research paper 'Implementation Considerations for Factor Investing' written by Marlies can be found at www.ftserussell.com/research

References:

1 Yield is a hybrid factor; it is related to Value but beyond a certain point is an assessment of the probability of the company going bankrupt or staying solvent and continuing to pay a dividend.

2 Factor Exposure and Portfolio Concentration, April 2017, FTSE Russell. www.ftserussell.com/research