

For professional investors



## Guide to factor investing in equity markets

FROM CONCEPT TO IMPLEMENTATION



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# Foreword

Factor investing is on the rise. Over the past decade, prominent institutional investors have publicly embraced factor-based approaches to securities selection and portfolio allocation. Concepts such as 'value investing' or 'low-volatility investing' have gained popularity and now appear frequently in mainstream financial media. Meanwhile, the number of retail investors introducing factor-based products in their portfolios has also increased substantially.

The reason is simple: factor investing works in practice. As Robeco's extensive in-house research and real-life experience with managing factor portfolios demonstrates, strategies focusing on proven factors add significant value for our clients. Targeting these factors in an efficient way is definitely worth the effort, even when management fees, taxes, trading costs and investment restrictions are taken into account.

A research paper<sup>1</sup> I co-authored with Eduard van Gelderen illustrated this very clearly. In this study, we analyzed the returns of US equity mutual funds over the 1990-2010 period. We found large differences between the funds with significant exposure to one or more proven factors and those without factor exposures. Only 20% of the funds with no exposure to factors yielded outperformance in the long run.

For funds that did have significant exposure to proven factors, this figure was substantially more favorable, ranging from 51% for single factor funds to 68% for two-factor funds, and 78% for three-factor funds. These results prove that factor investing works, in particular when investors allocate to multiple factors.

In all cases, the dispersion in performance was large though, which underscores the need for well-designed factor strategies. Robeco has spent the past 25 years on researching and enhancing factor investing strategies to provide our clients high-quality, well-designed strategies at reasonable costs.

Why consider factor investing in your portfolio? Which factors are relevant? What is the smartest way to define and combine factors? Are generic low-fee strategies really such a cheap option? These are some key considerations we addressed in this 'Guide to factor investing'.

**Joop Huij,**  
Head of Factor Investing Equities

1. E. van Gelderen and J. Huij, 'Academic Knowledge Dissemination in the Mutual Fund Industry: Can Mutual Funds Successfully Adopt Factor Investing Strategies?', *The Journal of Portfolio Management*, 2014.

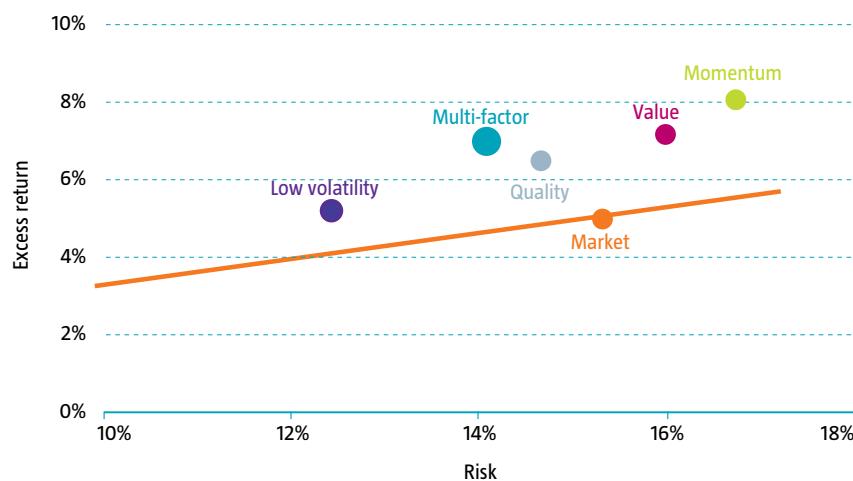
# 1

## What is factor investing?

The origins of factor investing date back to the 1970s. Factor investing is defined as investing in segments of the market with characteristics (factors) that have proven to achieve higher risk-adjusted returns than a passive investment in the market portfolio over the past decades. These segments offer a return premium in excess of the market.

The low volatility and value premium were already documented in the 1970s and the momentum and quality premium in the early 1990s.

**Figure 1: Historical performance of generic factors for equities**



Source: Blitz, "Factor Investing Revisited", Journal of Index Investing, 2015. Performance figures for generic US value-weighted factor portfolios from 1963:07 to 2014:12. Quality is defined as the equal-weighted combination of the Profitability and Investment factor portfolios.

Figure 1 above illustrates the higher risk-adjusted returns investors can obtain in the long run by investing in stocks exposed to factor premiums such as value, momentum, low volatility and quality, as well as to a balanced mix of all of these factors.

# The rise of factor investing

These factor premiums are anomalies to the Capital Asset Pricing Model (CAPM). The CAPM is a theoretical pricing model introduced in the early 1960s, that assumes a positive linear relationship between the systematic risk and the expected return of a stock or a bond.

Over the past decades, however, numerous empirical studies have documented the existence of various anomalies to the CAPM: financial securities featuring certain characteristics, such as low valuation multiples or low volatility, achieve higher risk-adjusted returns than the model predicts over long periods of time.

For many years, these academic insights remained relatively unnoticed by most investors. The breakthrough for factor investing came after the 2009 publication of a research report analyzing the performance of one of the world's largest sovereign wealth funds, NBIM, which invests Norwegian oil revenues. This study by professors Andrew Ang, from Columbia Business School, William Goetzmann, from Yale School of Management, and Stephen Schaefer, from London Business School, showed that approximately 70% of all active returns (alpha) since NBIM's inception in 1998 could be explained by implicit exposures to factor premiums and therefore did not reflect true management skill.

The analysis also highlighted that these factor exposures were merely a by-product of the bottom-up security selection by the active managers NBIM had hired and not a deliberate investment decision. The authors recommended NBIM to begin using a top-down approach to intentionally obtain strategic factor exposures and to examine how the individual factor premiums could be harvested in the most efficient manner. After this research was published, strategic allocation to factor premiums was dubbed by some as 'the Norway model'.

Estimates of the amount of money invested in factor strategies vary greatly from one source to another, ranging from one to two trillion US dollars globally in most cases. In a report published in October 2017, Morgan Stanley estimated that almost USD 1.5 trillion were invested in smart beta, quant and factor-based strategies and that assets under management have been growing 17% per year on average since 2010.

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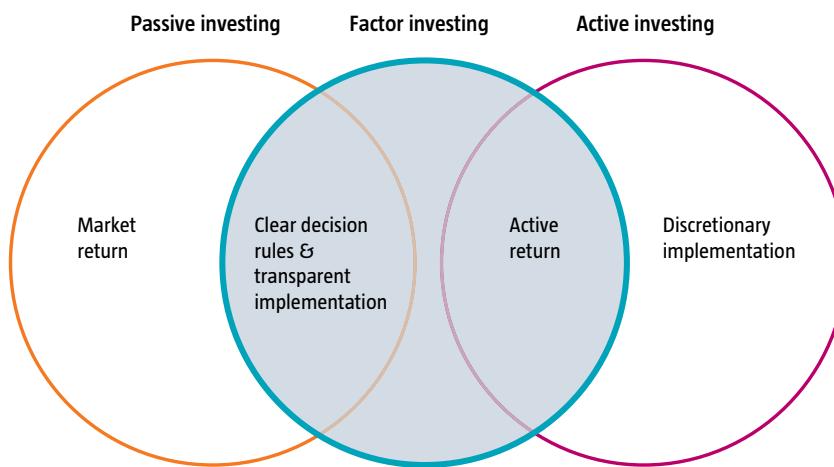
'The real breakthrough came after the 2009 publication of a research report on the performance of Norway's NBIM'

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## Between passive and active

Factor investing is seen by most investors as a third way of investing between traditional passive and active. It has features that are similar to passive investing such as its transparent, rules-based and low-cost nature. But like active investing it has an active return, as illustrated in the picture below.

Figure 2: Factor Investing: A third way of investing



Source: "Foundations of Factor investing", MSCI Research Insight, December 2013.

Most investors, both institutional and private banks (retail), have actually embraced it as such: a third bucket in their equity portfolio, to improve diversification and enhance returns without increasing costs.

# One concept, multiple solutions

The factor investing label encompasses a large variety of investment solutions that can be put to work in many different ways, using a wide array of investment vehicles. The range of possible solutions goes from generic single-factor smart beta exchange traded funds (ETFs) to more sophisticated offerings based on bespoke factor indices, or actively managed multi-factor and multi-asset funds and customized mandates.

This is important as the needs and priorities in terms of factor exposures or flexibility with regard to a reference index can differ greatly from one investor to another. Broadly speaking, factor-based solutions can be classified along two main dimensions: the level of discretion left to the asset manager and whether the product is focused on reducing risk or achieving higher returns.

Within each category, investors will find single-factor products, providing exposure to one specific factor, such as value or low volatility for example, that could be of strategic interest for them. But they will also find multi-factor solutions, that offer balanced exposure to several well-vetted factors. Figure 3 provides some examples.

**Figure 3: Overview of the factor-based product universe (with examples)**



Manager discretion				
	Public smart beta index	Standard non-public factor index	Rules-based tailor-made factor index	Active factor strategy
Return focus	Multi-factor ETF	Standard non-public value index	Customized multi-factor index	Active momentum strategy
Risk focus	Minimum volatility ETF	Non-public low beta index	Bespoke low volatility index	Active low risk strategy

Source: Robeco

Concerning the level of discretion left to the manager, investors can choose between either the replication of public smart beta indices, a standard rules-based and non-public index provided by an asset manager, a tailor-made index designed in-house by an asset manager, or a pure asset manager-led approach. In terms of design, the first kind of products is similar to classic passive strategies, while the last can be considered a variation of a traditional active strategy.

Investment vehicles available range from basic but cheap ETFs, typically based on publicly transparent smart beta indices, to sophisticated and customizable strategies offered by active managers, in the form of traditional funds or mandates. While the earlier usually provide exposure to factors at low cost, they also imply significant pitfalls (see chapter 3 of this guide) and cannot be customized. Meanwhile, the more sophisticated strategies may harvest factors more efficiently and offer customization possibilities. But this also comes with higher fees.

In terms of focus, products can be classified into two major categories: those designed to generate enhanced returns, through explicit exposure to well-rewarded factors premiums, and those with a clear focus on risk reduction, most of the time through volatility reduction. Depending on their own individual needs and preferences, investors can pursue very specific investment goals.

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**'While basic smart beta ETFs provide exposure to factors at low cost, they also imply significant pitfalls'**

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# 2

## Identifying & defining factors

In recent years, the combination of rising computing power and greater data availability has led to a dramatic rise in the number of market anomalies reported by academics. Purported factors have become so numerous that a number of experts have started warning about a so-called 'zoo' of new factors.<sup>2</sup>

<sup>2</sup> This term was coined by John Cochrane, of the University of Chicago, in his presidential address to the American Finance Association, back in 2011.

However, most of these factors tend to be related to one another and frequently turn out to be different, maybe more exotic, ways to measure the same phenomenon. Meanwhile, others only seem to work over short periods of time, or in a limited number of segments of the market.

In fact, our research shows that it is possible to bring the number of anomalies included in the zoo down to a handful of relevant factors, which consistently perform over multiple time periods and across markets. Investors should therefore be selective and focus on a small number of proven factors.

To qualify as relevant, a factor should meet the following requirements:

1. **Performing**: show strong premium with superior risk-adjusted returns;
2. **Proven**: surmounted attempts for falsification (within academia and in-house research);
3. **Persistent**: observable in different markets, stable over time, robust to different definitions;
4. **Explainable**: have an economic rationale with strong academic underpinnings;
5. **Executable**: implementable in practice; e.g. survive after trading costs and other market frictions.

# Four proven factors for equities

For equities, we find that only four factors meet the required criteria: value, momentum, low volatility and quality. These are well-rewarded factors, persistent over time, that have been documented in many different markets and across multiple asset classes. We show the long-term evidence in Figure 1 for the US market.

## 1 Value: stocks with low price to fundamentals tend to outperform

The value effect is the tendency of inexpensive stocks, measured for example by the price-to-book ratio, to achieve above-market returns. This phenomenon has been extensively documented in the academic literature, where it has been identified over long periods of time and in a variety of regions, including the US, Japan, Europe and emerging markets.

## 2 Momentum: recent winner stocks tend to outperform

Momentum is the tendency for stocks that have performed well in the recent past to continue to perform well; and for stocks that have performed poorly to continue to perform poorly. The momentum effect was first documented in the early nineties, and has been confirmed in numerous subsequent studies.

## 3 Low Volatility: low-risk stocks generate higher risk-adjusted returns than high-risk stocks

Already back in the 70s Robert Haugen and James Heins showed that low-beta stocks earn higher risk-adjusted returns than high beta stocks in the US market. In the mid-2000s, Robeco's David Blitz and Pim van Vliet showed in their award-winning paper<sup>3</sup> that this also held true globally; US, Europe and Japan. Not only did they confirm this low-beta effect, but they also showed that low-volatility stocks earn higher risk-adjusted than high-volatility stocks.

3. D. Blitz and P. van Vliet, 'The Volatility Effect: Lower Risk Without Lower Return', Journal of Portfolio Management, pp. 102-113, Fall 2007,

## 4 Quality: stocks with high quality outperform stocks with low quality

The quality effect is the tendency of high-quality stocks to outperform low-quality stocks and the market as a whole. Stocks of companies with high profitability, high earnings quality and conservative management (no exuberant M&A activity, for example) are seen as high-quality stocks. The quality effect was first documented in the early nineties where (low) accruals were used as an indicator for sound earnings quality. We find strong evidence for the abovementioned quality definitions across multiple regions.

# Enhanced factor definitions

Once the relevant factors have been identified, the following step is to find robust definitions for each one of them. Simplistic definitions typically used in generic factor strategies are suboptimal because they lead to significant exposures to unrewarded risks. To capture factor premiums efficiently,<sup>4</sup> it is important to make sure that the definitions applied to each factor address these issues.

4. Source: D. Blitz, J. Huij, S. Lansdorp and P. van Vliet, 'Efficient Factor Investing Strategies', Robeco white paper, 2016.

## Value

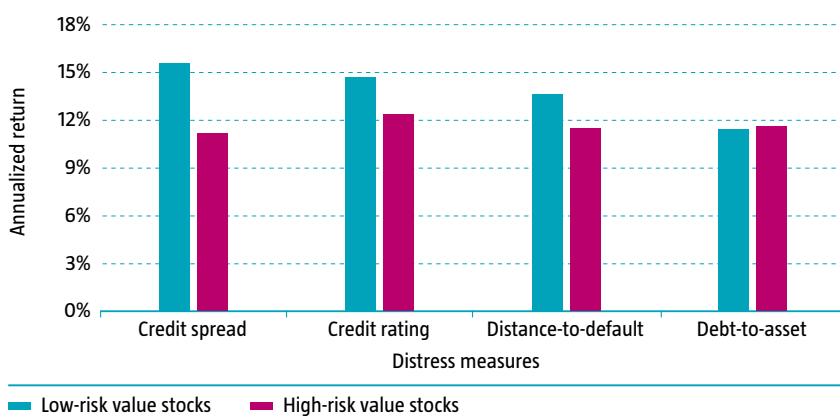
### *Concern: buying stocks that are cheap for a good reason*

Prominent academics, such as Eugene Fama and Kenneth French, have argued that the value premium is a compensation for risk, in particular distress risk.<sup>5</sup> However, this may not necessarily be the case. To the best of our knowledge, no empirical evidence that distress risk drives the value premium has been reported so far. Robeco's in-house research<sup>6</sup> actually shows that the value premium is not concentrated in high-risk firms.

5. E. Fama and K. French, 'The cross-section of expected stock returns', Journal of Finance, 1992.

6. W. de Groot and J. Huij, 'Are the Fama-French Factors Really Compensations for Distress Risk?', forthcoming Journal of International Money and Finance, September 2018, pp. 50-69.

**Figure 4: Relation between return and distress risk within value stocks**



Source: W. de Groot and J. Huij, 'Are the Fama-French factors really a compensation for distress risk?', forthcoming Journal of International Money and Finance, September 2018, pp. 50-69.

While conventional value strategies are typically exposed to distress risk, we found no empirical evidence that distress risk explains the value premium. In fact, our results show that it is not necessary to take on distress risk to profit from the value premium. As Figure 4 shows, high-risk value stocks (magenta bars), identified using different measures of distress risk, do not achieve higher returns than low-risk stocks (blue bars). It is therefore possible to design a value strategy that explicitly avoids financially distressed firms. In other words, that avoids buying stocks that are cheap for good reasons.

## Momentum

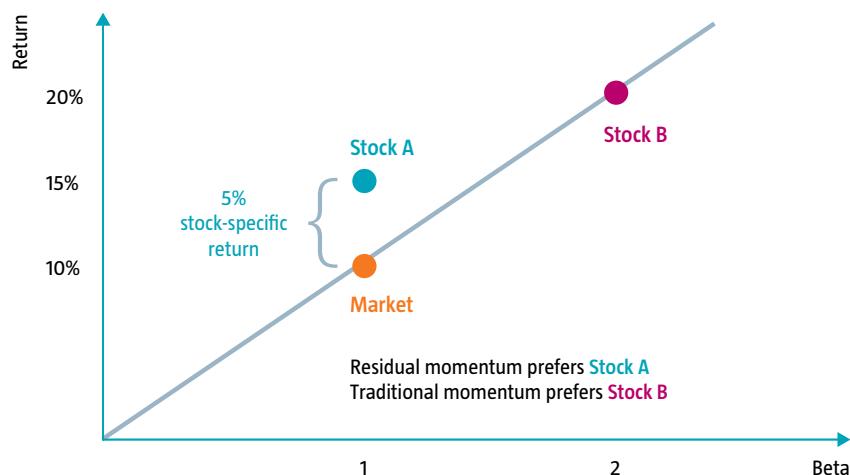
### *Concerns: sensitivity to market reversals and high turnover*

The momentum premium is one of the largest factor premiums, but its sensitivity to market reversals and high turnover are two well-known issues that plague the implementation of a momentum strategy. Our research and experience show that these concerns can be effectively addressed by focusing on stock-specific momentum and not trading too aggressively.

To achieve that, Robeco developed a 'residualization' technique<sup>7</sup>, that focuses on security-specific returns to measure momentum. This considerably reduces the general market reversal risk and halves the volatility compared to a conventional momentum strategy, while maintaining the strategy's returns, therefore doubling the Sharpe ratio.

7. D. Blitz, J. Huij and M. Martens, 'Residual Momentum', Journal of Empirical Finance, 2011

**Figure 5: Example: residual Momentum uses stock specific returns instead of total returns**



Source: D. Blitz, J. Huij and M. Martens, 'Residual Momentum', Journal of Empirical Finance, 2011

For example, of the two stocks in Figure 5, stock B has the highest past return. However, the 20% return of stock B is in line with its expected return given its market sensitivity (beta) of 2, while stock A earns 15%, which represents a 5% excess return after correcting for its market beta (it would have been expected to earn 10% based on its beta). This additional 5% is the so-called stock-specific or residual return, which remains after correcting for its market-expected return.

Meanwhile, trading cautiously and using investment flows to optimize the portfolio rebalancing needed to maintain the desired factor exposures helps keeping costs within reasonable bounds.

## Low volatility

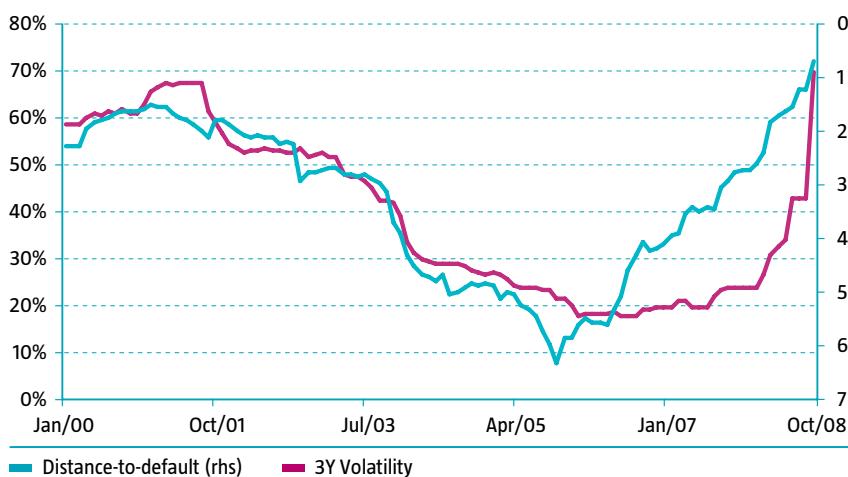
### *Concern: reliance on backward-looking, statistical risk measures*

Generic low volatility strategies are typically based on a single backward-looking historical risk measure, such as volatility or beta. This construction, however, may expose the strategy to some pitfalls, such as miscalculated downside risk. Not all low volatility stocks are equal and some are destined to perform better than others. This is especially true when low-volatility stocks become expensive, therefore Robeco takes the valuation of low-volatility stocks into account.

A more sophisticated approach can overcome these issues, by taking a multi-dimensional view of risk. This means using several low-risk variables, that include both long- and short-term statistical data. This also means taking into account backward and forward-looking measures of risk<sup>8</sup>, such as changes in a company's capital structure or credit default swap premiums.

8. J. Huij, P. van Vliet, W. Zhou and W. de Groot.  
'How distress risk improves low-volatility strategies: lessons learned since 2006', Robeco Research paper, 2012.

**Figure 6: Lehman Brothers' distance-to-default versus volatility**



Source: J. Huij, P. van Vliet, W. Zhou and W. de Groot, 'How distress risk improves low-volatility strategies: lessons learned since 2006', Robeco Research paper, 2012. Left hand side axis shows the 3Y rolling volatility of the stock in %. The distance-to-default (rhs axis) is measured as the number of standard deviations the stock is away from its point of default. A lower number means that the probability of going into default is higher.

These elements have a more forward-looking nature and helps to avoid investing in companies that have a high probability of going into default. For example, Figure 6 shows how distance-to-default, a measure of distress risk, was a much better predictor of Lehman Brothers' problems in the run-up to its bankruptcy than its stock's three-year volatility.

## Quality

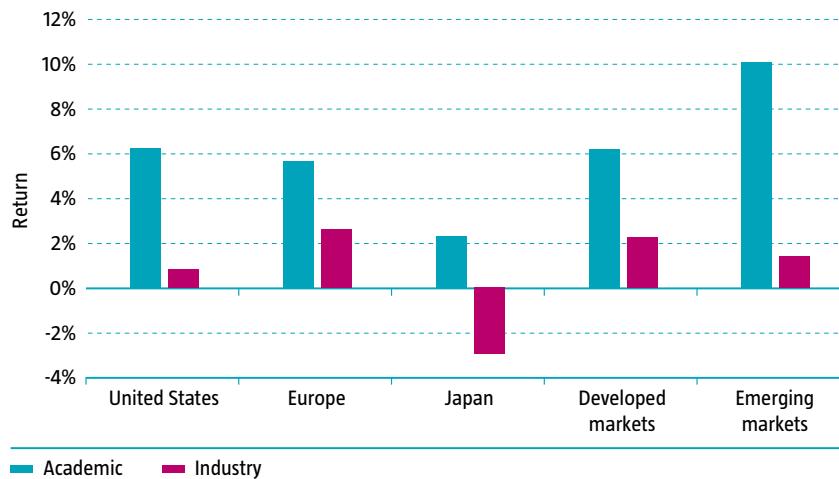
### *Concern: use of weak quality measures and blending with other factors*

A key concern with generic quality strategies is that they use poor definitions, which are sometimes even blended with other factors. For example, quality is often measured by financial leverage or earnings stability, which are actually more related to the low volatility factor. Other quality definitions – such as growth in profitability or earnings growth, but also an oft-used measure like return on equity (ROE) – have weak or no predictive power for future returns.

As shown in Figure 7, our research<sup>9</sup> also shows that measures based on academic studies (blue bars) outperform industry-based measures (magenta bars) in global markets. ‘Academic’ measures are accruals, gross profitability and net stock issues, while ‘industry’ measures include ROE, margins, ROE growth, leverage, and earnings variability.

9. G. Kyosev, M. Hanauer, J. Huij and S. Lansdorp  
‘Quality Investing – Industry versus Academic Definitions’, Working paper, 2016.

**Figure 7: Performance of academic-based quality versus industry-based quality**



Source: Kyosev, Hanauer, Huij and Lansdorp (2016, working paper). In the graph, we show historical returns of ‘academic-based’ quality definition and ‘industry-based’ quality definition for different regions. The ‘academic’ composite consists out of accruals, gross profitability and net stock issues, the ‘industry’ composite out of ROE, margins, ROE growth, leverage, and earnings variability. Results apply for a Top-minus-Bottom (T-B) self-financing portfolio which is long the top 20% stocks (Top) and short the bottom 20% stocks (Bottom). Returns are estimated on monthly data and then annualized. The sample period is January 1986–December 2014 for United States, Europe, Japan and developed markets and January 1993–December 2014 for emerging markets.

A good definition of quality should be multi-dimensional and incorporate profitability, earnings quality (low accruals) and investments (management policy, i.e. no excessive issuing of shares by CEOs to expand their emporium). Each of these three themes has strong academic underpinnings and is shown to have a strong stand-alone performance, as well as when combined.

## FACTORS PREMIUMS ACROSS ASSET CLASSES

Although most empirical research on factor premiums has focused on equity markets, factors appear to be present in other asset classes, such as bonds, currencies, commodities and even real estate. A good illustration of this is a ground-breaking paper titled 'Factor Investing in the Corporate Bond Market'.<sup>1</sup> In this article, Patrick Houweling and Jeroen van Zundert (pictured below) reported empirical evidence that similar factors as in the equity market generate economically meaningful and statistically significant alphas in the corporate bond market. This paper has recently been selected by the CFA Institute to receive a Graham and Dodd Scroll Award of Excellence for 2017.



In a research paper included in a recent book of collected articles on quant allocation<sup>2</sup>, Robeco's Guido Baltussen, Laurens Swinkels and Pim van Vliet went one step further and analyzed more than two centuries of international market data from multiple historical sources, relating to an array of asset classes. More specifically, the three authors looked at four major factor premiums in equity indices, government bonds, currencies, and commodities, using data going back to 1800.

This paper provides strong and robust evidence supporting the presence of factor premiums in the multi-asset space. It also shows that return factors, such as momentum, value and carry, work not only within individual asset classes, like equity indices, bond indices, currencies and commodities, but also more broadly across asset classes.

1. P. Houweling and J. van Zundert, 'Factor Investing in the Corporate Bond Market', *Financial Analysts Journal*, 2017, Vol. 73, No. 2.
2. G. Baltussen, M. Martens, P. van Vliet, 'Quant Allocation - Collected Robeco Articles', 2018.

# 3

## Combining & harvesting factors

In their bid to harvest factor premiums, investors might be tempted to opt for cheap generic solutions, typically based on so-called 'smart beta' indices. Examples of these products are ETFs on value-weighted indices, equal-weighted indices and risk-weighted indices. Several index providers, such as MSCI and FTSE, offer such indices, and asset managers have introduced index funds and exchange-traded funds that track them.

But while most of these solutions do provide some exposure to factors, they remain far from ideal. In addition to using overly simple factor definitions that expose investors to unrewarded risk, many of these popular index-based products have unintended negative exposures to other factors, which results in suboptimal factor exposures when combined in one portfolio.

Moreover, these generic products usually follow publicly transparent indices, which share their methodology and upcoming 'trades' and are therefore prone to arbitrage (see box below). The simplicity and transparency of these indices mean that other investors, such as hedge funds, can identify in advance which trades are going to be executed, and can opportunistically take advantage of this, leading to high hidden costs for those investing in these indices.

For more than a quarter century, Robeco's quantitative research team has focused on analyzing and designing efficient factor strategies that avoid these pitfalls and deliver more stable and consistent performance in the long run. To achieve that, we make sure we combine factor premiums efficiently in order to avoid unintended negative exposures.

## **TIMING OR DIVERSIFYING ACROSS FACTORS?**

One of the most hotly debated topics in the field of quantitative finance is whether investors should try to tactically time their exposures to factors. Single-factor portfolios can experience periods of relative underperformance or outperformance that can last multiple years. As a result, timing may appear like an appealing option, in principle.

However, there is little evidence that it is possible to predict accurately which factors are going to do well in the near future, especially if one takes the high transaction costs into account that are involved with timing factors. Robeco's research<sup>10</sup> shows that, instead of tactically trying to identify the best one, it is far more important to strategically diversify across factors to be successful.

<sup>10</sup>D. Blitz, S. Lansdorp, V. Roscovat and M. Vidojevic, 'The promises and challenges of factor timing', Robeco client note, February 2018.

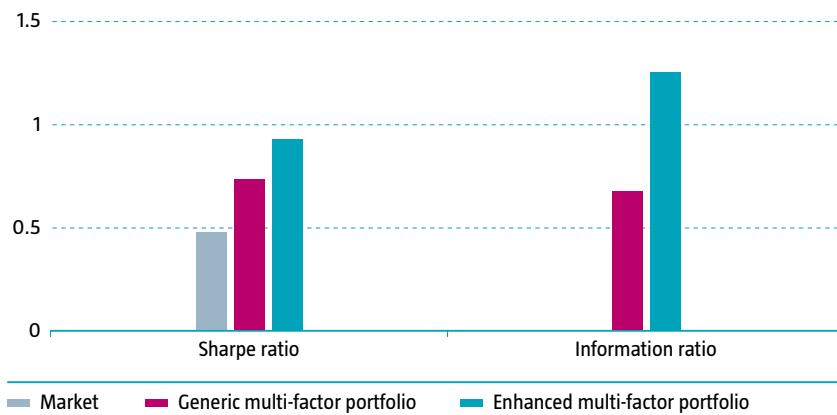
## Combining factors

Individual factors can have negative exposures to the other proven factors. An illustration of this phenomenon would be an expensive low-volatility stock, or a quality stock that is in a downward trend. This is highly undesirable, because having negative exposures to factors with positive expected returns lowers the expected return.

Efficient factor strategies are designed in such a way that premiums do not clash with each other. For all single-factor strategies, they should ensure that the securities we select do not go against other factors, applying our enhanced factor definitions, as described in the previous chapter. By combining various individual factor strategies, based on these definitions, it is possible to produce a multi-factor portfolio that offers high exposure to multiple factor premiums, minimizes turnover and avoids the individual factors going against each other. This methodology of avoiding negative or opposing factor exposures results in efficient and balanced exposure to all proven factors. This leads to a better expected risk-adjusted return in the long-run for the multi-factor equity portfolio, as illustrated in the graph below, which compares a naïve combination of factors (in magenta) and the efficient combination of enhanced factor definitions (in blue).

**'Efficient factor strategies are designed in such a way that premiums do not clash with each other'**

**Figure 8: Superior risk-adjusted performance for Robeco's enhanced factors**



Source: D. Blitz, J. Huij, S. Lansdorp and P. van Vliet, "Efficient Factor Investing Strategies", Robeco whitepaper, 2016. Excess returns are measured relative to the MSCI World index from June 1988 to December 2015. Returns are measured in USD. For generic factor strategies the MSCI Value Weighted Index, MSCI Momentum Index, MSCI Minimum Volatility Index and MSCI Quality Index are used. The enhanced factor strategies are based on portfolio simulation and is net of transaction cost of 75 bp. The factor weights in the multi-factor combination are 25% value, 25% momentum, 25% low volatility and 25% quality, respectively. The value of your investments may fluctuate. Results obtained in the past are no guarantee for the future.

## Avoiding unnecessary turnover

One frequent criticism of factor investing is that it inevitably leads to high portfolio turnover, in particular compared to classic passive strategies. While following a cap-weighted market index is essentially a ‘buy-and-hold’ approach, with limited portfolio activity, explicit allocation to factors necessarily leads to more trading as a sub segment of the market is targeted.

Robeco’s factor investing strategies use portfolio-construction processes designed to keep trading low and trading costs under control, using a stock ranking, sell-driven approach. This kind of method is less sensitive to changing market inputs. We also use cash-flows to achieve better exposure to the stock ranking and lower turnover. When there is a cash inflow, we buy attractive top-ranked stocks rather than investing proportionally over all of the existing stocks in the portfolio like an ETF on a factor index or model portfolio would do. In the event of a cash outflow, we sell the least attractive bottom-ranked stocks. By rebalancing different portfolios at different times, the resulting trades also have less market impact.<sup>11</sup>

11. See B. van der Grient, L. Swinkels and P. van Vliet, ‘The added value of cash-flow optimized portfolios’, Robeco client note, 2017.

## Integrating sustainability

Another distinctive feature of our factor investing strategies is that we integrate sustainability in the portfolio construction process, based on RobecoSAM’s annual Corporate Sustainability Assessment scores<sup>12</sup>. Robeco’s sister company RobecoSAM has been a leader in sustainability analysis since 1995 and assesses approximately 4,500 listed companies on environmental, social and governance (ESG) criteria.

More specifically, we ensure that the weighted sustainability score of every portfolio is at least as high as that of the reference index. If the portfolio generated by the stock selection model scores below average on sustainability, the portfolio construction tool will select stocks that improve the portfolio’s sustainability profile.

Securities from companies with a higher sustainability score are therefore more likely to be included in the portfolio. This implies that we positively screen stocks, in contrast to an exclusion policy that only allows negative screening. This enhanced form of ESG integration ensures we avoid the risk of being overexposed to less sustainable companies while maintaining exposure to the top-ranked stocks.

12. For more information, please visit:  
<http://www.robecosam.com/en/sustainability-insights/about-sustainability/corporate-sustainability-assessment/index.jsp>

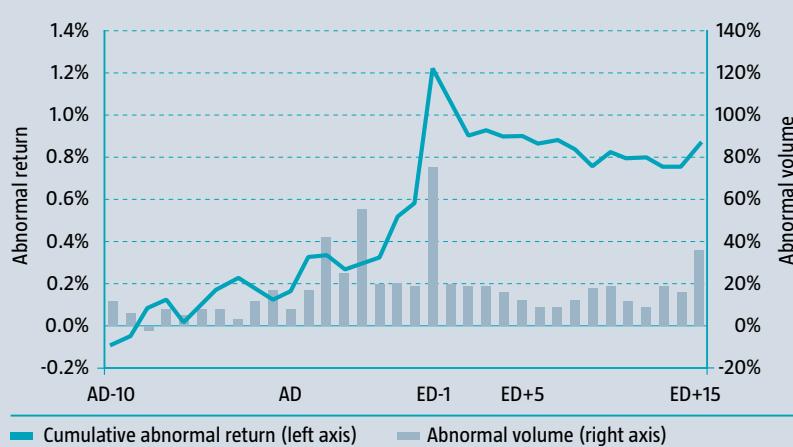
# BEWARE OF THE HIDDEN COSTS OF PUBLIC TRANSPARENCY OF SMART BETA INDICES

The rise of factor investing seen in recent years has resulted, amongst other things, from large flows into exchange traded funds (ETFs) based on popular so-called 'smart beta' indices. But while these generic products do offer exposure to factors in a transparent way and at relatively low management fees, they can incur quite high hidden costs.

In addition to some of the major flaws of generic products already mentioned in this booklet, they are also prone to significant overcrowding and arbitrage. Strategies based on generic factor indices may be fully transparent, but this transparency comes at a cost to investors. It means that other investors can identify in advance which trades are going to be executed, and can opportunistically take advantage of this.

Recent research by Robeco shows strong empirical evidence supporting that this arbitrage is happening. It suggests that many market participants anticipate upcoming trades in these public factor-based indices, at the cost of those who invest based on these indices, either via ETFs or index-funds.

**Figure 9: Price impact to MSCI Minimum Volatility Index additions and deletions**



Source: Huij and Kyosev, 2016, working paper. Results are calculated for MSCI Minimum Volatility USD indices, returns are in USD. The graphs show the average cumulative outperformance and abnormal volume of new overall constituents in the MSCI Minimum Volatility indices during Sept 2010-Dec 2015. AD is announcement day, ED is effective day.

Figure 9 shows abnormal trade volumes and price pressure in stocks that are being added to the MSCI Minimum Volatility index. An ETF would buy these newly added stocks at the effective date (ED), the day the stocks are being included in the index. However, the announcement date (AD) is the day that MSCI already publicly disseminates the new pro-forma index, hence investors (such as hedge funds) can anticipate the upcoming trades of the ETFs and index-funds. The announcement date is already 9 days before the effective date, the date that ETFs and index-funds will rebalance accordingly.

The bars show that there is significant abnormal trade volume in these newly to be added stocks to the index. The blue line shows the significant upward price pressure on these stocks as a consequence. Hence, if you invest in an ETF on the MSCI Minimum Volatility index the ETF is buying these stocks at a higher price.

For stocks that are being deleted from the index we find the same effect, hence a mirroring image. Stocks that will be deleted from the index are already declining in price before the ETF sells them at the rebalancing day (ED) and therefore sells the stocks too late (i.e. at a lower price). Our researchers estimate the cost of this transparency for public factor indices to be 16.5 basis points per year for the end investor.

At the same time, our researchers also found signs of overcrowding in these public factor indices, which partly explains why products based on these indices are cheap. Unlike an active asset manager who needs to close a fund to protect capacity, to protect existing investors from an inevitable decrease in average performance as the fund grows, an index provider does not have such responsibility. At Robeco, we avoid this pitfall by keeping all our factor investing solutions transparent for our clients only and carefully managing capacity.

# CASE STUDY: A PRIVATE BANK EMBRACES THE 'THIRD WAY OF INVESTING'

In this section, Chris Suiker, managing director responsible for Robeco's Wholesale Distribution in the Netherlands, Belgium and Luxembourg, explains how we partnered with a major Dutch player in the field of factor investing.

In the early stages of discussing factor investing with this bank, we focused on the low volatility factor, Chris Suiker recalls. We put a lot of emphasis on explaining how low volatility investing can best be implemented. But in 2012, we decided to go a step further relative to other asset managers: CIOs or fund selectors from private banks that distribute our funds were offered full access to our quant researchers. This enabled the firms to benefit from the latest research insights, as they were given presentations to help them introduce and familiarize their clients with the concept of factor investing.

"The history of factor investing is so rich and diverse that it is difficult to communicate the message in one go," Suiker says. "But Robeco's expertise in the field of quantitative investing is widely recognized, which usually gives us a strong case."

These efforts paid off in September 2015, when the bank decided to dedicate a strategic part of its portfolio to factor investing. It divided its equity portfolio into three parts: one consisting of passive solutions, another that comprised factor investing and a third part that was a satellite solution, which could incorporate mostly high conviction tilts into regions and/or themes. At the time, the bank received many different proposals from various asset managers for these different parts, and Robeco's offering fund was eventually selected for the factor investing pocket.

Our close relationship with the bank and our knowledge-sharing effort were a decisive element. We had a relatively short live track record in multi-factor investing, back in 2014, but the strategy was backed by extensive portfolio simulations, going back 30 years and at the time 12 years of experience in managing factor investing portfolios combining value, momentum and quality factors in a global enhanced indexing strategy. Moreover, we had acquired plenty of knowledge about standalone factor strategies by that point, including our Conservative Equities (low volatility) strategies, launched in 2006.



Chris Suiker, managing director responsible for Robeco's Wholesale Distribution in the Netherlands, Belgium and Luxembourg

The Multi-Factor Equities fund for this private bank was launched in September 2015. In the first three months, assets grew to over EUR 600 million. That is the fastest that Robeco has ever accumulated assets in a new equity fund. As of December 2017, assets in the fund amounted EUR 1.6 billion.

In addition to comprehensibility and transparency, cost also played an important role in the bank's decision. "The phasing-out of distribution fees in the Netherlands has led to both greater transparency and lower costs overall," says Suiker. "Private banks are increasingly opting for passive investments in combination with active asset managers who are able to comfortably cover their costs in the form of higher returns. That includes multi-factor solutions."

# Conclusion

Academic research and many years of practice have shown that factor-based strategies can help to significantly improve the return-risk profile of a portfolio, for example by reducing downside risk or enhancing long-term returns.

Robeco has been ahead of the pack in factor investing approaches from the very beginning. We have identified four proven factor premiums – value, momentum, low volatility and quality – and our products have been designed to avoid the common pitfalls of generic factor-based strategies.

We start by avoiding unrewarded risks with enhanced factor definitions. For example, we apply our residual momentum technique and avoid distressed value stocks.

Our approach also focuses on efficiently combining factor premiums and making sure premiums do not clash with each other. This way, we ensure a positive exposure to all the desired factor premiums over time.

Another distinctive characteristic of our factor investing solutions is that we apply a ranking-based approach and use investment flows efficiently. This way, we avoid unnecessary turnover and overcrowded trades.

As a result, we successfully manage efficient multi-factor portfolios for our clients with high exposure to all factors, because we find that an allocation to multiple factors increases the probability of success for our clients substantially.



## Important Information

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## Contact

### **Robeco**

P.O. Box 973  
3000 AZ Rotterdam  
The Netherlands

**T** +31 10 224 1224  
**I** [www.robeco.com](http://www.robeco.com)

