ROBECO
The Investment Engineers

ROBECO QUANTITATIVE EQUITIES

More than meets the factor eye

Introduction

Factor investing is based on asset pricing theory, with a few foundational factor themes like value, momentum, and quality emerging from the literature. To add value over and above generic factors, Robeco continually innovates these factor themes and designs complementary proprietary signals based on short-term and alternative data. To measure factor exposure of the resulting portfolio, investors often use factor scans as a measurement tool. But do these scans always give the right insights?

Indeed, measuring factor exposure can be problematic if the toolkit is based on generic factor definitions rather than enhanced factor definitions that are designed to earn superior risk-adjusted returns. In this white paper, we show that factor investments which appear unbalanced when viewed through a generic factor lens can actually represent a well-balanced and profitable combination in terms of exposure, risk, and performance when viewed through the relevant factor lens.

The art of factor investing

Factors have become a staple in the portfolio constructor's toolkit, where maintaining a consistent balance between factors to both manage risk and harvest the associated alpha is often the aim. The majority of these successful factors can be grouped under value, momentum, quality, and low risk. At Robeco, we have been pioneers in evolving these salient factor themes for many decades. Indeed, Swade et al. (2024) find that, while these themes prevail over time, constantly innovating within the different factor themes helps maintain an alpha edge over generic factors. In practice, we therefore do not rely on simple academic factor definitions but on enhanced versions thereof that look to improve a given factor's return or risk profile.[1] In addition, we go beyond traditional factor themes and bring in proprietary signals that exploit short-term dynamics and/or alternative data sources.[2]

To illustrate the efficacy of this combination of refined factors and proprietary signals, Figure 1 from Blitz (2024) highlights that around 80% of the outperformance of the Robeco model cannot be explained by generic academic factors. While such factor differentiation has put Robeco Quant Equities among the top in peer group performance comparisons (Blitz, 2024), prospects and clients are sometimes puzzled when they rationalize our factor exposure using market factor analysis tools. For instance, they may diagnose what appears to be a factor imbalance, raising questions about the overall portfolio diversification. In this white paper, we shed light into this very puzzle. Of course, as Robeco is not in the business of providing generic factor exposure, such outcomes should not be surprising. Nevertheless, we strive to look under the hood and rationalize common misconceptions that can arise from analyzing our factor exposure based on generic factors as available in third-party market tools.

Specifically, we dive deeply into questions like: How does one best measure factor exposure? Does it really matter how these factors are defined, or are they all the same? And, most importantly, are these the 'right' factors for producing alpha? To this end, we use an exemplary global equity factor portfolio, the Robeco Developed Markets

[1] See, among others, De Groot & Huij (2018), Blitz et al. (2011) and Kyosev et al. (2020).
[2] Harvesting short-term alpha factors brings some challenges and Blitz et al. (2024) allude to how these can be tackled in practice.

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Marketing material for professional investors, not for onward distribution

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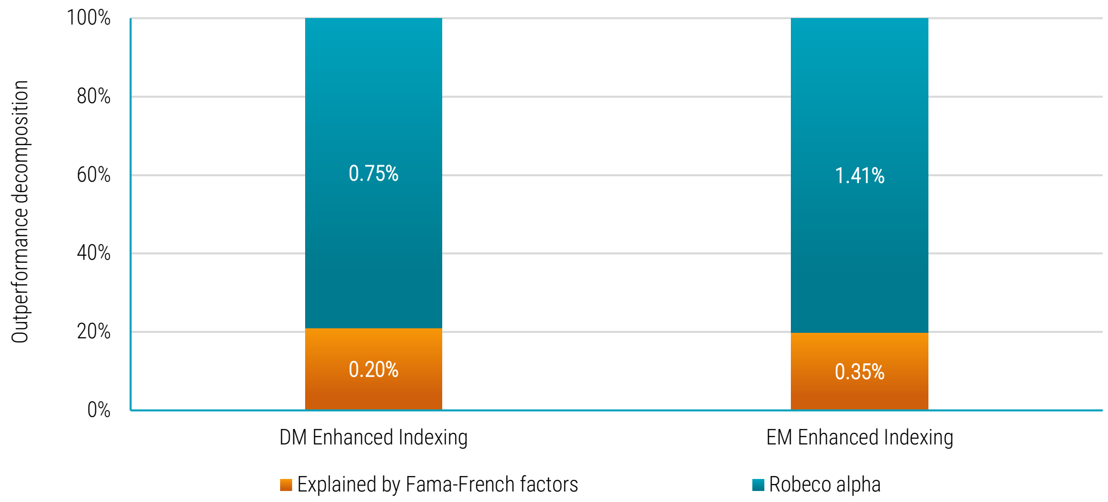
Enhanced Indexing (DM EI) strategy, and explore the current state of factor definitions. In particular, we compare the outcome of market-leading tools to those based on Robeco's enhanced proprietary factors. We discuss the value of third-party factor scans for evaluating portfolios but also highlight some of their pitfalls. Finally, we emphasize the importance of diversified and balanced portfolio construction to mitigate unrewarded risk and enhance long-term performance.

Figure 1 – Alpha decomposition in Developed and Emerging Markets Robeco Enhanced Indexing



Source: Robeco, Kenneth French data library. Taken from Blitz (2024). The chart shows Robeco annualized outperformance explained and not explained by Fama-French large/mid-cap generic academic portfolios, for DM and EM, respectively. Figures calculated based on Robeco QI Institutional Global Developed Enhanced Indexing Equities and Fama-French developed markets 6 factor return series from September 2004 to October 2023, and on Robeco QI Institutional Emerging Markets Enhanced Index Equities and Fama-French emerging markets 6 factor return series from June 2007 to October 2023.

Exposing exposure

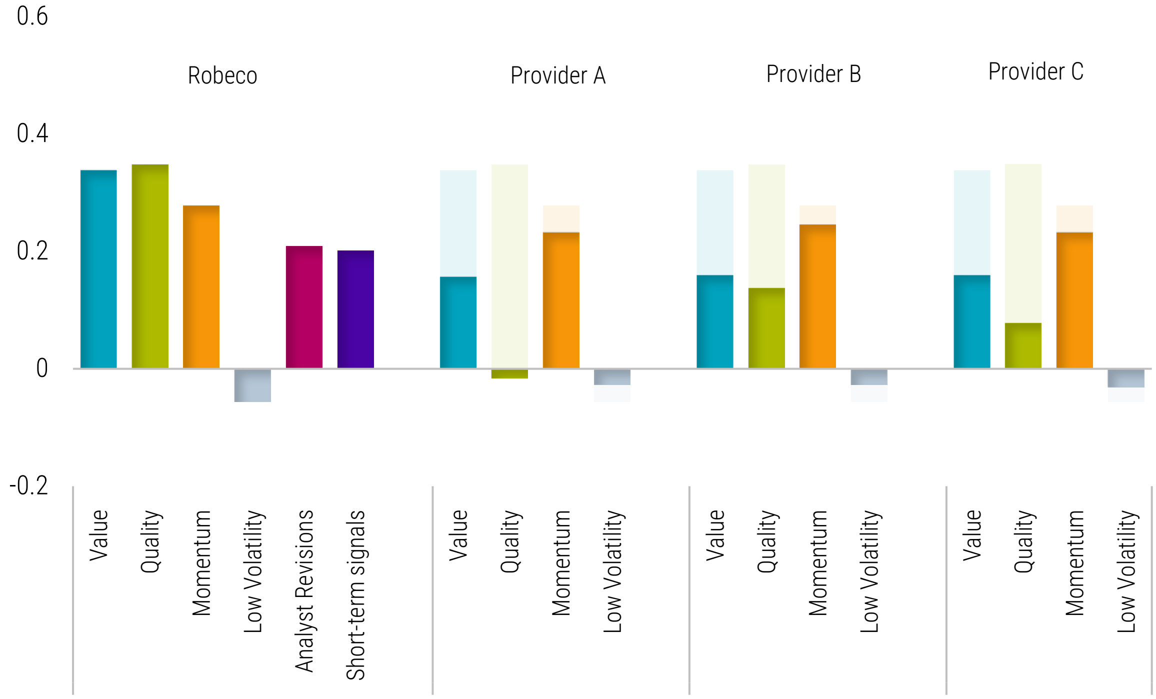
Measuring factors

To measure factor exposure, two choices need to be made: (a) what factor definition to use and (b) what method to use for computing the effective factor exposure. For the latter, we follow the approach adopted by most third-party tools, meaning we use z-score-weighted exposures which measure how well a stock scores on a factor relative to its peers in similar sectors and regions. Z-scores are expressed in terms of standard deviations. A z-score of 0 means that the stock’s factor score equals the average among its peer group. A score of 1 indicates that the score is one standard deviation higher than the average. By aggregating z-scores across stocks in a portfolio and stocks in the benchmark, we can calculate how far a portfolio deviates from the benchmark.

While the various market tools all rely on similar z-score weighting methodologies to generate factor exposures, they still might show different outcomes. Such discrepancies are driven by differences in the underlying factor definitions. To illustrate this, we analyze Robeco’s DM EI strategy using z-score weighting. This strategy targets balanced exposure to each of Robeco’s proprietary value, quality, momentum, and analyst revisions factors as well as short-term and alternative alpha signals. The first three, commonly abbreviated as VQM, alongside low volatility are broadly available from third-party tools. Analyst revisions is a less commonly known factor and is generally omitted from factor scans.

Figure 2 compares the factor exposures calculated using the z-score methodology on Robeco's proprietary factor definitions and those of three market-leading providers of factor analysis tools. Using the factor definitions of providers A, B and C, we observe positive exposure to each of the VQM factors targeted by the DM EI strategy. This shows that the Robeco factors do share common DNA with their generic counterparts.

Figure 2 – Factor exposures of the Robeco Enhanced Indexing strategy



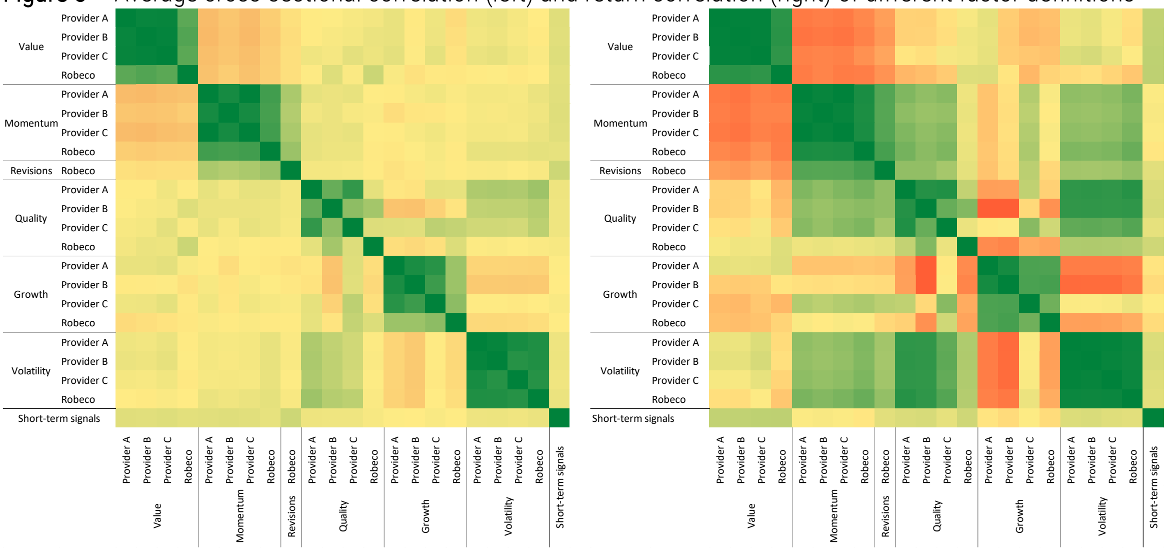
Source: Robeco Quantitative Investments. Robeco Enhanced Indexing Developed Markets strategy through factor scan methodology of provider A, B and C, and through Robeco's proprietary factors, as of July 2024. The y-axis shows factor exposure, measured using z-score methodology.

As expected, the level of generic factor exposure is substantially lower than when viewed through our proprietary factor lens. The gap between generic and Robeco factors – and between third-party factor tools – is largest for quality, reflecting the lack of an unambiguously defined quality factor. Instead, quality represents a collection of diverse signals that are grouped together depending on investors' perception of firm quality.

Importantly, generic factor scans typically do not feature analyst revision factors (let alone short-term or alternative alpha signals), thus missing a crucial part of the overall picture. To bridge this gap, we capture additional factor exposure to our proprietary analyst revisions factor and to our proprietary factor representing short-term signals, both of which add meaningfully to the strategy's nature. Overall, there is alignment between Robeco and generic factors, assuring that, in addition to delivering alpha, there is consistent exposure to the targeted factors – even if third-party tools might not fully capture the nuances.

Because factor exposures may change over time, it is instructive to assess the relationship between Robeco's proprietary definitions and market factors over a long sample period. Figure 3 presents correlation charts computed for data from 1985 to 2024 for developed market stocks at the aggregate factor level. The left panel shows the average cross-sectional correlation of the factors' z-scores, while the right panel depicts the return correlation of the corresponding top-bottom monthly returns. To offer a more complete perspective, in addition to VQM, the figures include growth and volatility, which are commonly featured in third-party tools, as well as Robeco analyst revisions factor and short-term signals.

Figure 3 – Average cross-sectional correlation (left) and return correlation (right) of different factor definitions



Source: Robeco Quantitative Investments. Left: Cross-sectional correlation of z-scores, averaged over time. Right: top-bottom quintile return correlation. MSCI World Index constituents, 1985-2024.

Figure 3 shows that while Robeco VMQ factors clearly differ from third-party market factors, they belong to the same family of risk-return drivers. The figure supports the groupings that have developed, showing a low correlation between different factor themes but a high correlation within each factor. Additionally, some factor themes tend to agree on stocks, as seen in the common defensive nature of quality and low volatility stocks. Conversely, value and momentum on average disagree on stocks, which is inherent in their distinct nature.

This difference is also reflected in the varying return correlations. Importantly, we document the distinct nature of the Robeco analyst revision factor (which shows only mild positive correlation to momentum factors) and of the short-term signals which are largely orthogonal to all other characteristics.

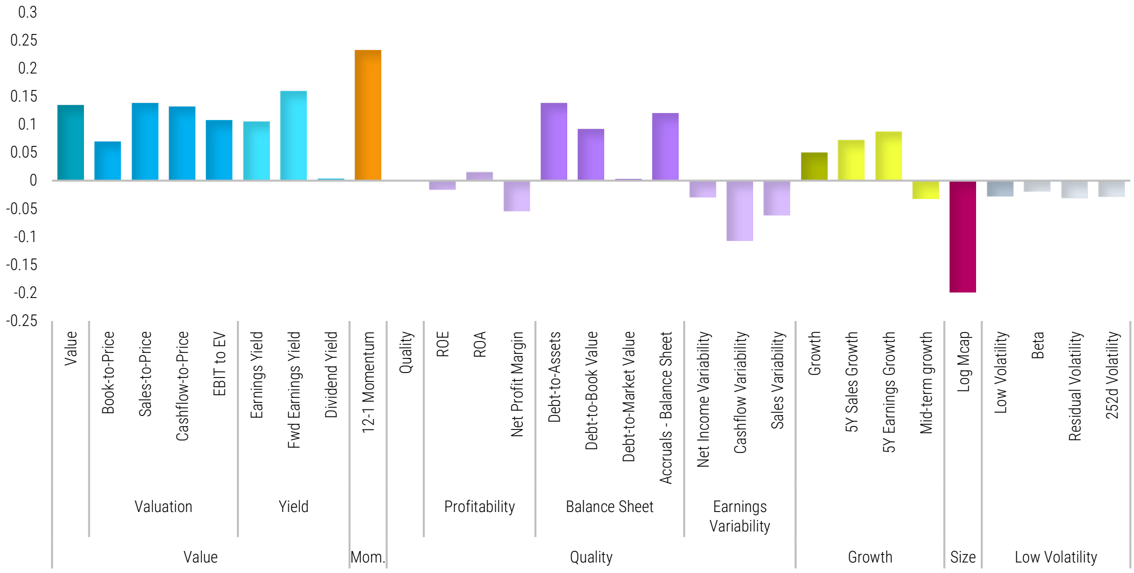
The difference between generic and Robeco factor exposure may rightfully prompt questions from investors. But the resolution of this apparent contradiction is evident: the primary role of an active factor manager is to seek exposure to factors and enhance them beyond standard, generic definitions. In this light, an unbalanced generic factor scan need not be a bug, but rather a feature.

Why Robeco factors: Alpha vs risk

In this section, we explain how Robeco factors differ from generic definitions, and why our portfolios may show mixed exposure to them. First, we construct a generic factor scan for value, momentum, and quality composed of the variables that appear in multiple market tools.

To illustrate, Figure 4 expands on Figure 2 and shows the exposure of the Robeco DM EI portfolio to these common variables. The factor scan breaks down value and quality into sub-factors and also considers exposure to non-targeted factors such as growth, size, and low volatility.

Figure 4 – Generic factor exposures of the Robeco Enhanced Indexing strategy



Source: Robeco Quantitative Investments. Robeco Enhanced Indexing Developed Markets strategy exposure to generic factor variables as of July 2024. Aggregate factor exposure is a composite of the shown variables. Generic variables are compiled using an overlap of variables included by the three leading market tools tested. Note that Robeco Enhanced Indexing does not target growth, size, or low-vol. The y-axis shows exposure, measured using the z-score methodology.

The portfolio exhibits a unanimously positive tilt toward value and momentum. In contrast, its exposure to generic quality variables is more mixed, which can create the impression of an overall factor imbalance. However, recall from Figure 2 that Robeco DM EI has a balanced exposure to Robeco's proprietary VQM factors. The factor imbalance towards generic factors is the result of having no generally accepted factor definition of quality. Instead, the variables grouped under the label quality have historically been the most varied, nuanced, and changeable.

This variability is illustrated in Figure 5, in which we show the return correlation for variables using monthly data between 1985 and 2023 for developed market stocks. While a variety of accounting ratios and yield metrics can be used to define value, Figure 5 demonstrates that most of these value metrics are highly correlated, meaning they tend to agree on which stocks are cheap and which are expensive. On the other hand, the return correlation across quality metrics is much lower. As a result, the choice of variables to define quality has a much greater impact on exposure measurements and performance outcomes. Whereas third-party tools can pick up the obvious, they will not capture these nuances, which matter at least as much.

Where does this lack of alignment between quality metrics originate? Unlike other factors, which can be represented by a single firm characteristic, the quality factor combines multiple dimensions relating to the fundamental strength of businesses. In this vein, Fama and French (2015) expanded their original three-factor model (Fama and French, 1993) with a 'profitability' and an 'investment' factor. Since then, the elusive nature of 'good quality' has led to a faster expansion of relevant metrics compared to other factors. With the adoption of alternative alpha signals, this expansion is not expected to stop any time soon. Company quality is generally grouped in terms of balance sheet strength, earnings variability, and the ability to generate strong profitability. Figure 5 shows that while correlations within each dimension are high, there is disagreement across dimensions, as shown by the low correlation between the quality sub-factors.

Given the wide range of quality metrics used in the industry, a portfolio's exposure to quality factors is expected to be diverse, as different managers emphasize different aspects of quality. This is reflected in the challenge of defining the quality factor.

Figure 5 – Correlation among value (left) and quality (right) variables

Source: Robeco Quantitative Investments. Correlation of Top-Bottom quintile portfolios for each variable, 1985-2024 using MSCI World Index constituents.

Consistency and balance

Diversified factor investing

Identifying and measuring exposure to investment factors is important, but equally so is how these factors are accessed and integrated into a portfolio. To effectively harness investment factors, a portfolio should be constructed as broadly diversified as possible, controlling for risk drivers such as currency, country, sector, beta, and more.

Diversification is important not only at the stock level but also at the factor level. It may be tempting to time factors, as factor portfolios exhibit clear cycles, but research shows that accurately timing factors is difficult. Potential benefits are often eroded by increased portfolio turnover and lowered diversification across factors (Blitz et al., 2018 or Dichtl et al., 2019).

Robeco portfolios, therefore, seek to outperform by gaining balanced exposure to our proprietary factors over the full market cycle. While factor tilts may fluctuate through time, the portfolio should not be dominated by any single factor, because consistency and factor balance over time is rewarded. To evaluate how well a portfolio balances its factor exposures, we introduce a new tool called factor loading attributions.

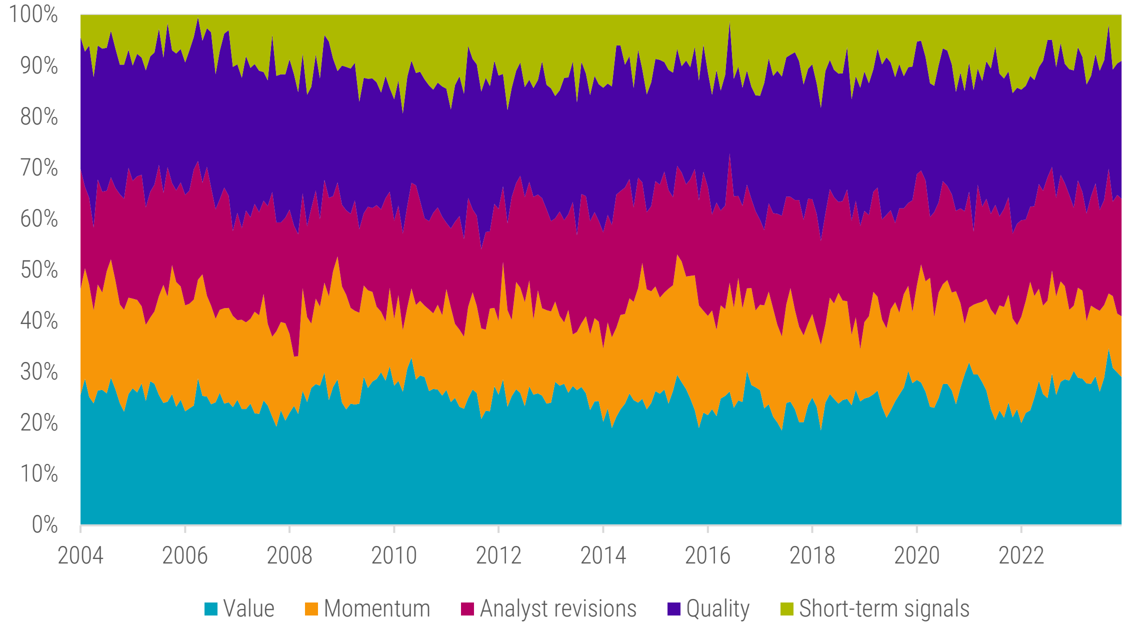
Factor loading attributions

Factor loading attributions show how portfolio holdings correlate with the underlying factors and help us understand a portfolio's factor decomposition. Factor loadings are expressed as a percentage of total factor exposure. Loadings should align with the weight targeted in portfolio construction, and hence, a well-diversified factor portfolio should display consistent exposure to each of the underlying factors.

Figure 6 shows the Robeco enhanced factor loading attribution over time for the Robeco DM EI portfolio, including the Robeco analyst revisions and short-term signal factors targeted by the strategy. Factor exposure remains balanced and diversified over time through various market conditions, including inflationary or deflationary periods, bull or bear markets, and significant events such as the 2008-2009 global financial crisis, the 2014 oil crisis, or the 2020 Covid-19 pandemic.

Note that factor loading is not evenly distributed at all times across all factors. On average, the portfolio allocates about 25% to both value and quality, while momentum and revisions each receive around 20%, with the remaining 10% going to short-term signals. This distribution stems primarily from differences in turnover between factors, with momentum, analyst revisions, and in particular short-term signals experiencing higher turnover rates compared to value and quality.

Figure 6 – Factor loadings for Robeco Enhanced Indexing (DM) strategy



Source: Robeco Quantitative Investments. Time-series of factor loading for Robeco Enhanced Indexing Developed Markets strategy. Simulated data to represent the portfolio from 2004 to 2024. Factor loadings are computed using a cross-sectional regression of portfolio weights on the respective factor portfolios weights.

Therefore, Robeco considers transactions costs in the construction of all portfolios, thus striking a balance with more weight towards the relatively slower-moving factors while keeping a close to 50/50 balance between slow and fast factors overall. Additionally, factor exposures fluctuate about 5% around their long-term average. This is related to the time-varying nature of factors, where factors may become more or less correlated depending on the market regime. For example, if value stocks outperform, the momentum factor may rotate into this pocket of the market, increasing the correlation between these factors and increasing the portfolio's value exposure. This can be seen after the value factor's strong comeback in 2021–2022.

A key distinction between the more common z-score weighting and the factor loading approaches is that the former is a *univariate* approach while the latter is a *multivariate* approach. Hence, z-score weighting looks at each factor in isolation and does not account for exposure to other factors. As such, it does not directly relate to factor balance. A high exposure to value says very little about the portfolio's exposure to the other factors. Factor loading attributions offer a unified approach that shows what percentage of exposure can be attributed to each factor. Within this framework, a high exposure to value (relative to 1/N) implies that exposure to another factor must necessarily be lower.

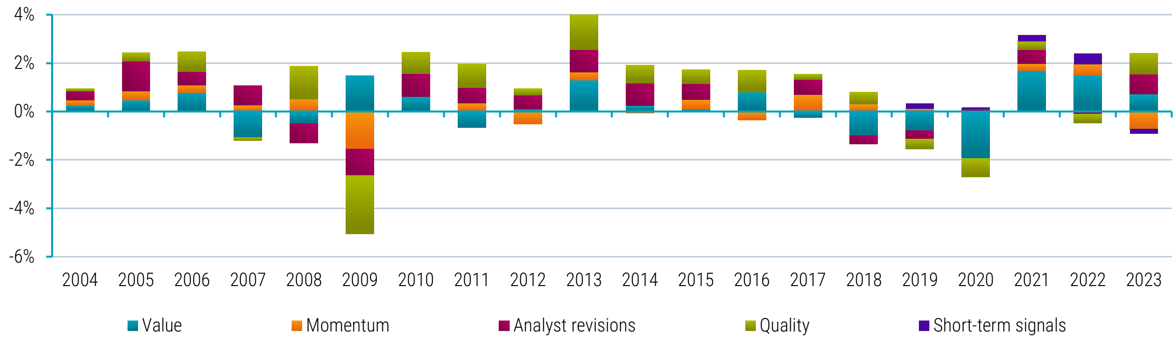
Reaping the rewards

We have shown that a portfolio constructed from proprietary factor definitions may look unbalanced when viewed through a generic factor lens. One reason that proprietary factors differ from market standard ones is that they are alpha-seeking rather than risk-explaining. For Robeco, deviations from generic factors should result in improved performance. In the words of Johan Cruyff, the legendary Dutch football player and coach, "quality without results is pointless", and that belief extends to our investment philosophy. In this final section, we demonstrate the results that this investment process has delivered over the past two decades.

It is clear that enhancing factors means that third-party tools might not fully capture these exposures, but these enhancements are the cornerstone of delivering risk-adjusted outperformance for clients. Our Enhanced Indexing strategy, which was initially introduced in 2004, has consistently delivered positive risk-adjusted returns for clients. Figure 7 shows the live track record of the strategy, highlighting the performance attributed to various targeted factors such as value, quality, momentum, analyst revisions, and short-term signals. The balanced combination of factors in a robust and diversified portfolio helps avoid extreme fluctuations experienced in other approaches, leading to a steadier journey through market cycles.

To demonstrate this, Blitz (2024) leverages the eVestment database of active managers to compare the Robeco Enhanced Indexing track record against peers with a similarly long performance history. The Robeco strategy delivered an information ratio (IR) in the top 2% of a sample of more than 2,000 strategies. Regressing the track record against generic factors in the Kenneth French database, he shows that around 80% of the outperformance cannot be attributed to generic factors, instead relying on Robeco alpha, furthering the case for the importance of defining alpha factors.

Figure 7 – Factor alpha contribution for Robeco Enhanced Indexing (DM) strategy



Source: Robeco Quantitative Investments, MSCI. The figure shows excess returns of the Robeco QI Institutional Global Developed Enhanced Indexing Equities strategy versus the market index in EUR. The excess return is fully attributed to underlying Robeco factors (excluding cash & other). Monthly data, gross of fees, based on gross asset value. The value of your investments may fluctuate. Benchmark figures include net dividends reinvested. Results obtained in the past are no guarantee for the future.

Conclusion

The evolution of factors in both academia and industry is unlikely to stop or even slow. With the advent of new techniques, computing power, and datasets, undoubtably more factors – and opportunity to create alpha – will follow. Even so, tools like z-score style charts, risk models, and correlation analyses will remain important for investors to gauge whether their portfolios are aligned with their objectives.

There is no one-size-fits-all approach to measuring factors, exposure to factors, or evaluating their risk and performance contributions. While the market offers powerful tools to analyze portfolios based on factor lenses, these tools are primarily designed to explain well-known risks. For asset managers looking to generate alpha, it is crucial to continually innovate within factor themes, targeting return enhancing exposures that are not necessarily covered by standard, generic factor scans.

Some factors are more challenging to pin down, with quality being a prominent example of a factor that does not always align, even among widely used factors. Importantly, advancing the investment process through proprietary and next-generation elements such as short-term or alternative alpha signals makes leading quantitative investment strategies increasingly harder to analyze as their generic factor exposures are diluted by design.

Effective portfolio construction stems from a comprehensive understanding of how exposures manifest as portfolio risks. While it is crucial to monitor and understand risk, a well-constructed portfolio should result in a reasonably balanced risk profile even through dynamic market environments, while avoiding unrewarded risk. And although factor scans remain an important tool in a well-researched investment process, variations observed in factor scans should only be a concern when they are not well understood.

Two decades on, the success of our Enhanced Indexing portfolios in both developed and emerging markets supports this stance. Through prudent portfolio construction and enhanced factors, these portfolios have delivered superior risk-adjusted returns, setting them apart from over 2,000 active strategies. More than three quarters of the added value over that period cannot be attributed to the generic value, quality, and momentum factors. Notwithstanding the positive correlation to traditional VQM, there is surely more than meets the factor eye.

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Additional information for investors with residence or seat in the Dubai International Financial Centre (DIFC), United Arab Emirates

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Additional information for investors with residence or seat in France

Robeco Institutional Asset Management B.V. is at liberty to provide services in France. Robeco France is a subsidiary of Robeco whose business is based on the promotion and distribution of the group's funds to professional investors in France.

Additional information for investors with residence or seat in Germany

This information is solely intended for professional investors or eligible counterparties in the meaning of the German Securities Trading Act.

Additional information for investors with residence or seat in Hong Kong

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Additional information for investors with residence or seat in South Korea

The Management Company is not making any representation with respect to the eligibility of any recipients of the Prospectus to acquire the Shares therein under the laws of South Korea, including but not limited to the Foreign Exchange Transaction Act and Regulations thereunder. The Shares have not been registered under the Financial Investment Services and Capital Markets Act of Korea, and none of the Shares may be offered, sold or delivered, or offered or sold to any person for re-offering or resale, directly or indirectly, in South Korea or to any resident of South Korea except pursuant to applicable laws and regulations of South Korea.

Additional information for investors with residence or seat in Liechtenstein

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Additional information for investors with residence or seat in Malaysia

Generally, no offer or sale of the Shares is permitted in Malaysia unless where a Recognition Exemption or the Prospectus Exemption applies: NO ACTION HAS BEEN, OR WILL BE, TAKEN TO COMPLY WITH MALAYSIAN LAWS FOR MAKING AVAILABLE, OFFERING FOR SUBSCRIPTION OR PURCHASE, OR ISSUING ANY INVITATION TO SUBSCRIBE FOR OR PURCHASE OR SALE OF THE SHARES IN MALAYSIA OR TO PERSONS IN MALAYSIA AS THE SHARES ARE NOT INTENDED BY THE ISSUER TO BE MADE AVAILABLE, OR MADE THE SUBJECT OF ANY OFFER OR INVITATION TO SUBSCRIBE OR PURCHASE, IN MALAYSIA. NEITHER THIS DOCUMENT NOR ANY DOCUMENT OR OTHER MATERIAL IN CONNECTION WITH THE SHARES SHOULD BE DISTRIBUTED, CAUSED TO BE DISTRIBUTED OR CIRCULATED IN MALAYSIA. NO PERSON SHOULD MAKE AVAILABLE OR MAKE ANY INVITATION OR OFFER OR INVITATION TO SELL OR PURCHASE THE SHARES IN MALAYSIA UNLESS SUCH PERSON TAKES THE NECESSARY ACTION TO COMPLY WITH MALAYSIAN LAWS.

Additional information for investors with residence or seat in Mexico

The funds have not been and will not be registered with the National Registry of Securities or maintained by the Mexican National Banking and Securities Commission and, as a result, may not be offered or sold publicly in Mexico. Robeco and any underwriter or purchaser may offer and sell the funds in Mexico on a private placement basis to Institutional and Accredited Investors, pursuant to Article 8 of the Mexican Securities Market Law.

Additional information for investors with residence or seat in Peru

The Superintendencia del Mercado de Valores (SMV) does not exercise any supervision over this Fund and therefore the management of it. The information the Fund provides to its investors and the other services it provides to them are the sole responsibility of the Administrator. This Prospectus is not for public distribution.

Additional information for investors with residence or seat in Singapore

This document has not been registered with the Monetary Authority of Singapore ("MAS"). Accordingly, this document may not be circulated or distributed directly or indirectly to persons in Singapore other than (i) to an institutional investor under Section 304 of the SFA, (ii) to a relevant person pursuant to Section 305(1), or any person pursuant to Section 305(2), and in accordance with the conditions specified in Section 305, of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. The contents of this document have not been reviewed by the MAS. Any decision to participate in the Fund should be made only after reviewing the sections regarding investment considerations, conflicts of interest, risk factors and the relevant Singapore selling restrictions (as described in the section entitled "Important information for Singapore Investors") contained in the prospectus. Investors should consult their professional adviser if you are in doubt about the stringent restrictions applicable to the use of this document, regulatory status of the Fund, applicable regulatory protection, associated risks and suitability of the Fund to your objectives. Investors should note that only the Sub-Funds listed in the appendix to the section entitled "Important information for Singapore Investors" of the prospectus ("Sub-Funds") are available to Singapore investors. The Sub-Funds are notified as restricted foreign schemes under the Securities and Futures Act, Chapter 289 of Singapore ("SFA") and invoke the exemptions from compliance with prospectus registration requirements pursuant to the exemptions under Section 304 and Section 305 of the SFA. The Sub-Funds are not authorized or recognized by the MAS and shares in the Sub-Funds are not allowed to be offered to the retail public in Singapore. The prospectus of the Fund is not a prospectus as defined in the SFA. Accordingly, statutory liability under the SFA in relation to the content of prospectuses does not apply. The Sub-Funds may only be promoted exclusively to persons who are sufficiently experienced and sophisticated to understand the risks involved in investing in such schemes, and who satisfy certain other criteria provided under Section 304, Section 305 or any other applicable provision of the SFA and the subsidiary legislation enacted thereunder. You should consider carefully whether the investment is suitable for you. Robeco Singapore Private Limited holds a capital markets services license for fund management issued by the MAS and is subject to certain clientele restrictions under such license.

Additional information for investors with residence or seat in Spain

Robeco Institutional Asset Management B.V., Sucursal en España with identification number W0032687F and having its registered office in Madrid at Calle Serrano 47-14º, is registered with the Spanish Commercial Registry in Madrid, in volume 19.957, page 190, section 8, sheet M-351927 and with the National Securities Market Commission (CNMV) in the Official Register of branches of European investment services companies, under number 24. The investment funds or SICAV mentioned in this document are regulated by the corresponding authorities of their country of origin and are registered in the Special Registry of the CNMV of Foreign Collective Investment Institutions marketed in Spain.

Additional information for investors with residence or seat in South Africa

Robeco Institutional Asset Management B.V. is registered and regulated by the Financial Sector Conduct Authority in South Africa.

Additional information for investors with residence or seat in Switzerland

The Fund(s) are domiciled in Luxembourg. This document is exclusively distributed in Switzerland to qualified investors as defined in the Swiss Collective Investment Schemes Act (CISA). This material is distributed by Robeco Switzerland Ltd, postal address: Josefstrasse 218, 8005 Zurich. ACOLIN Fund Services AG, postal address: Leutschenbachstrasse 50, 8050 Zürich, acts as the Swiss representative of the Fund(s). UBS Switzerland AG, Bahnhofstrasse 45, 8001 Zurich, postal address: Europastrasse 2, P.O. Box, CH-8152 Opfikon, acts as the Swiss paying agent. The prospectus, the Key Information Documents (PRIIP), the articles of association, the annual and semi-annual reports of the Fund(s), as well as the list of the purchases and sales which the Fund(s) has undertaken during the financial year, may be obtained, on simple request and free of charge, at the office of the Swiss representative ACOLIN Fund Services AG. The prospectuses are also available via the website.

Additional information for investors with residence or seat in Taiwan

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The Prospectus has not been approved by the Securities and Exchange Commission which takes no responsibility for its contents. No offer to the public to purchase the Shares will be made in Thailand and the Prospectus is intended to be read by the addressee only and must not be passed to, issued to, or shown to the public generally.

Additional information for investors with residence or seat in the United Arab Emirates

Some Funds referred to in this marketing material have been registered with the UAE Securities and Commodities Authority ("the Authority"). Details of all Registered Funds can be found on the Authority's website. The Authority assumes no liability for the accuracy of the information set out in this material/document, nor for the failure of any persons engaged in the investment Fund in performing their duties and responsibilities.

Additional information for investors with residence or seat in the United Kingdom

Robeco is deemed authorized and regulated by the Financial Conduct Authority.

Additional information for investors with residence or seat in Uruguay

The sale of the Fund qualifies as a private placement pursuant to section 2 of Uruguayan law 18,627. The Fund must not be offered or sold to the public in Uruguay, except under circumstances which do not constitute a public offering or distribution under Uruguayan laws and regulations. The Fund is not and will not be registered with the Financial Services Superintendency of the Central Bank of Uruguay. The Fund corresponds to investment funds that are not investment funds regulated by Uruguayan law 16,774 dated 27 September 1996, as amended.