Quantitative Equities

Short-sightedness, rates moves and a potential boost for Value

- Spread in valuation multiples remains wide by historical standards
- Medium-term return expectations for Value are bright
- Extrapolative growth forecasts also drive the Value premium

Value stocks have historically outperformed their growth peers and the market by a healthy margin – a phenomenon known as the Value premium. This anomaly is observed across markets and regions (such as developed and emerging markets), in recent and older time periods,[1] and even across different asset classes.[2] That said, Value investing is not without risks as illustrated by the especially challenging Value winter of 2018-2020.[3] Following this period, however, we have again witnessed strong performance from the Value factor, triggering numerous questions from investors.

In this article, we address three important topics. Firstly, we assess how investors can frame current valuations and medium-term value return expectations. We show that the spread in valuation multiples between expensive and cheap stocks remains high compared to historical levels, despite the value rally we have recently witnessed. This signals tailwinds for the style if valuations revert to 'normal' levels. Secondly, we examine the relationship between interest rates and value performance and in doing so, confirm the findings from our 2021 analysis that show there is little to no empirical evidence of a long-term relationship. While there have been some signs of this in recent years, we note that this eye-catching phenomenon could have weakened in recent months. Thirdly, we look at the role of growth expectations by studying the dynamics for value and growth

Article
For professional investors
November 2022

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[1] See: Baltussen, G., van Vliet, B., and van Vliet, P., November 2021, "The Cross-Section of Stock Returns before 1926 (And Beyond)", SSRN working paper.

[2] See: Baltussen, G., Swinkels, L., and van Vliet, P., December 2021, "Global Factor Premiums", Journal of Financial Economics.

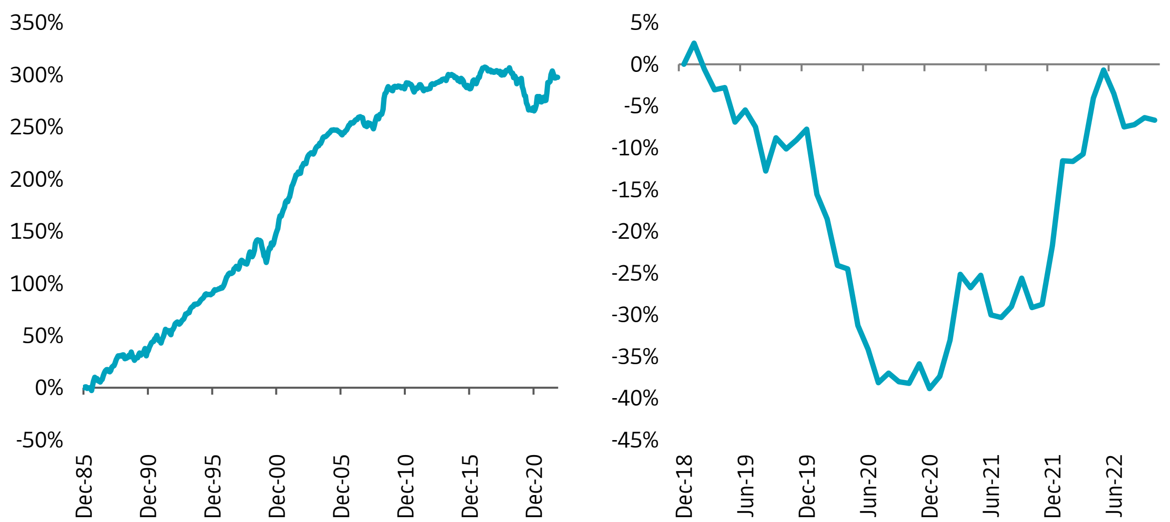
[3] For more information on the Value winter we refer to Baltussen, G., and Van Vliet, P., August 2020, "Will Value survive the quant winter?", Robeco article.

stocks. We observe that growth expectations widen before portfolio formation, but mean revert sharply after portfolio formation, giving rise to the value premium.

Value has recouped its quant winter losses

Figure 1 depicts the cumulative performance of the enhanced value factor in global equity markets since 1985 and 2018 respectively.[4] After enduring a harsh quant winter, the announcement of successful Pfizer-BioNTech Covid-19 vaccine candidate results on 9 November 2020 triggered a new spring for the value factor.[5] This resulted in the long-awaited value comeback which maintained traction in 2021 and has continued through 2022. Overall, the value factor has delivered attractive long-term returns despite the challenging period between 2018 and 2020.

Figure 1 | Cumulative return for the enhanced Value factor



Source: Robeco, Refinitiv. The chart shows the cumulative return of an enhanced value strategy (see footnote 4 and the appendix for more details on the enhanced value strategy). The investment universe consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995). The sample period is January 1986 to October 2022 (left side) and December 2018 to October 2022 (right side), respectively.

Value factor remains very attractive on valuation and fundamental grounds

The poor performance delivered by value strategies from 2018 to 2020 was accompanied by an extreme widening of valuation multiples between value and growth stocks, with the former getting cheaper than the latter. But the solid rebound over the last two years could perhaps leave some investors wondering whether the value style is now less attractive.

[4] We define value as in Blitz, D. C., and Hanauer, M. X., January 2021, "Resurrecting the value premium", Journal of Portfolio Management. More specifically, the enhanced value strategy is based on a composite of book-to-market (R&D adjusted), EBITDA/EV, CF/P, and NPY metrics. Value stocks are sorted into quintile portfolios based on the valuation composite, in a region and sector neutral manner for developed markets and in a country neutral manner for emerging markets. Quintile portfolios are equal-weighted and rebalanced monthly. Our sample comprises the standard MSCI All Countries Index constituents, i.e., large and mid-cap stocks across both developed and emerging markets. Details regarding the universe, value definition, and neutralities are provided in the appendix.

[5] Hanauer, M. X., and Schneider, S., May 2021, "Spring has sprung for Value investing", Robeco article.

In Figure 2 we show the valuation spread of the value factor, meaning the differences in valuation multiples of value and growth stocks.[6] As we control for valuation differences that are normally observed between both portfolios, a valuation spread that is above one indicates cheapness, while a reading below one implies that the factor is relatively expensive.

Figure 2 | Composite valuation spread of the enhanced Value factor

Source: Robeco, Refinitiv. The chart shows the composite valuation spread between the top and bottom quintile portfolios of the enhanced value strategy. The investment universe consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995). The value spread is the average spread of the book-to-market (R&D adjusted), EBITDA/EV, and CF/P. The sample period is January 1986 to October 2022.

Interestingly, the spread has only shrunk slightly during this period. More specifically, it is still wider as at the end of October 2022 than it was at the beginning of the value winter in 2018. To put things into perspective, the current spread is even wider than it was at the peak of the dot-com bubble in 2000. Furthermore, value is not only cheap from a relative perspective, but also on an absolute basis as it trades at a forward price-to-earnings ratio (PE) of slightly above 8x, as illustrated in Figure A.1 in the appendix.

Despite the strong recent recovery, how then is it possible that the value factor is still cheaper than it was at the beginning of its drawdown? This is because, while changes in the value spread explain a large portion of the value returns, they do not explain them entirely. The remaining variation stems from three components:

- Carry (+): return when the price does not change. As value stocks tend to have higher dividend yields, this is a positive component.
- Portfolio migration (+): companies previously classified as value stocks can become more expensive and get replaced by cheaper alternatives, and vice versa for the expensive portfolio.
- Changes in fundamentals (+ or -): a firm’s profitability or book value changes over time. This can be a positive or negative contribution.

Together, these three components make up the structural alpha, while the revaluation alpha stems from changes in the value spread. Figure 3 illustrates the relationship between value returns and changes in the value spread. For this

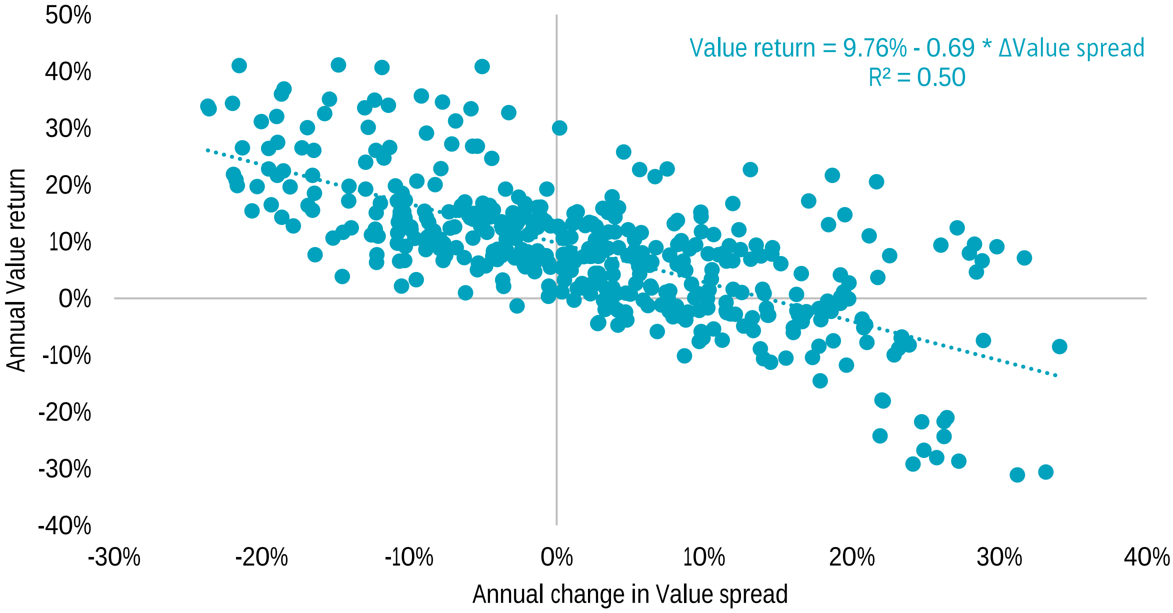
[6] The ‘value spread’ is expressed as the ratio of a basket of valuation multiples of the top and bottom quintile value portfolios. We control for value spread differences that are normally observed between both portfolios, such that a value spread above one indicates cheapness. Since cheap stocks by definition have higher fundamental value to price ratios than their expensive peers, it is particularly important for the value factor to scale the value spread by its historical normal level.

purpose, value returns are the continuously compounded annual returns of the enhanced value factor, while the change in the value spread is the log of the ending value spread minus the log of the starting value spread.

In our analysis, we observe a robust negative relationship between value returns and changes in the value spread, with the latter accounting for roughly 50% of the variation in the former. Meanwhile, carry, portfolio migration and changes in fundamentals explain the remaining portion of the value returns as outlined above.

Crucially, we also document a high intercept of almost 10%. This can be interpreted as a cleaner estimate of the value premium for a hypothetical long-minus-short value factor, given that it is purged of the time-varying effects of multiple expansions and compressions.

Figure 3 | Value returns and multiple expansion



Source: Robeco, Refinitiv. The chart shows the relationship between value returns and changes in value spreads. Value returns are the continuously compounded annual returns of the enhanced value factor, while the change in the value spread is the log of the ending value spread minus the log of the starting value spread. The investment universe consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995). The sample period is January 1986 to October 2022.

From the same analysis, we establish that the realized full sample return of the long-short value factor (8.14%, continuously compounded) can be decomposed into the structural alpha (the intercept) and the revaluation alpha (the remainder):

8.14%	=	9.76%	+	-1.62%
Realized value return	=	**structural alpha**	+	**revaluation alpha**

The structural alpha is the expected return if the valuation is unchanged. Therefore, we expect high positive value returns even if the value spread remains at current elevated levels. At almost 10%, the structural alpha is even higher than the average realized value return over our sample period. This is due to the net spread widening that occurred over this interval as shown in Figure 2.

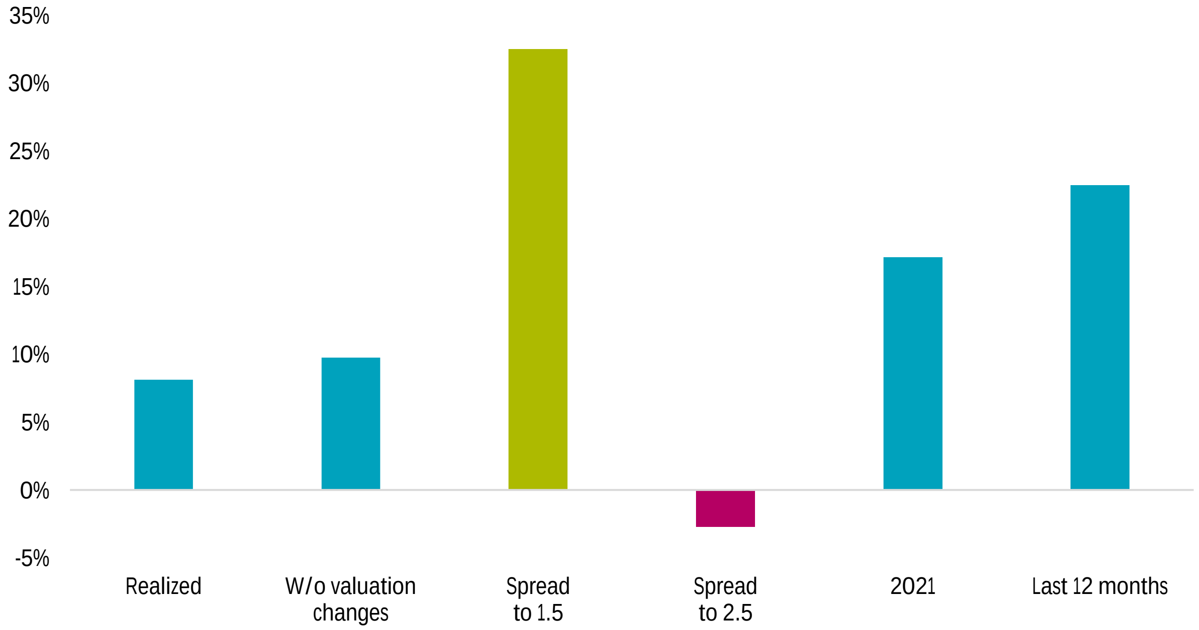
Better times could lie ahead

Our analysis also allows us to form medium-term return expectations for the value factor based on changes in the value spread, for example, if it reverts towards its long-term average. Given the relationship estimated above and the current value spread of 2.09, we can conduct a scenario analysis for the expected top-minus-bottom value portfolio (continuously compounded) return over the next 12 months as outlined below:

- The value spread reverts to 1.5 as at January 2020 (pre-Covid level)
- The value spread widens back to its previous all-time high of 2.5 as at October 2021
- Because these returns represent top-minus-bottom gross returns, we add the top-minus-bottom returns for 2021 and the last 12 months for reference purposes.

In Figure 4 we reveal that the strong value returns generated over the last 12 months or in the 2021 calendar year might not be fleeting. If valuations revert to more 'normal' levels, value stocks could indeed deliver similar or higher gains than those we have seen since the value rotation started. Conversely, we would expect the value factor to deliver slightly lower but solid returns if valuation levels remain elevated. That said, we cannot rule out the possibility of value spreads widening substantially from current levels, which would result in lower expected value returns over the next 12 months.

Figure 4 | Return expectations of the value premiums – October 2022



Source: Robeco, Refinitiv. The chart shows the continuously compounded annual value return over the full sample, the expected value return assuming no changes in the value spread and assuming that the value spread will go to 1.5 and 2.5 within the next 12 months. Furthermore, we show the continuously compounded annual value return for 2021 and the last 12 months. The expected value returns are estimated based on the regression from Figure 3. The investment universe consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995). The sample period is January 1986 to October 2022.

It important to acknowledge that these numbers only apply to a hypothetical, equally weighted long-minus-short value factor. Therefore, real-life return expectations must be reduced accordingly. Firstly, the contribution from the short side is limited in long-only applications as the relative performance is typically measured versus a value-weighted benchmark. Secondly, these numbers do not include transaction costs. Thirdly, the actual relative returns delivered by an investment depend on how much exposure it has to the value factor. This would mean that long-only value portfolios that account for liquidity, trading and risk restrictions typically have around 3% long-term expected outperformance.

Nevertheless, the scenario analysis shows that the return expectations for value investing are healthy, even if the valuation spread remains elevated. Moreover, the value style could benefit further when valuations revert to 'normal' levels relative to history and benefit from significant tailwinds – as we have recently seen in our live value portfolios.

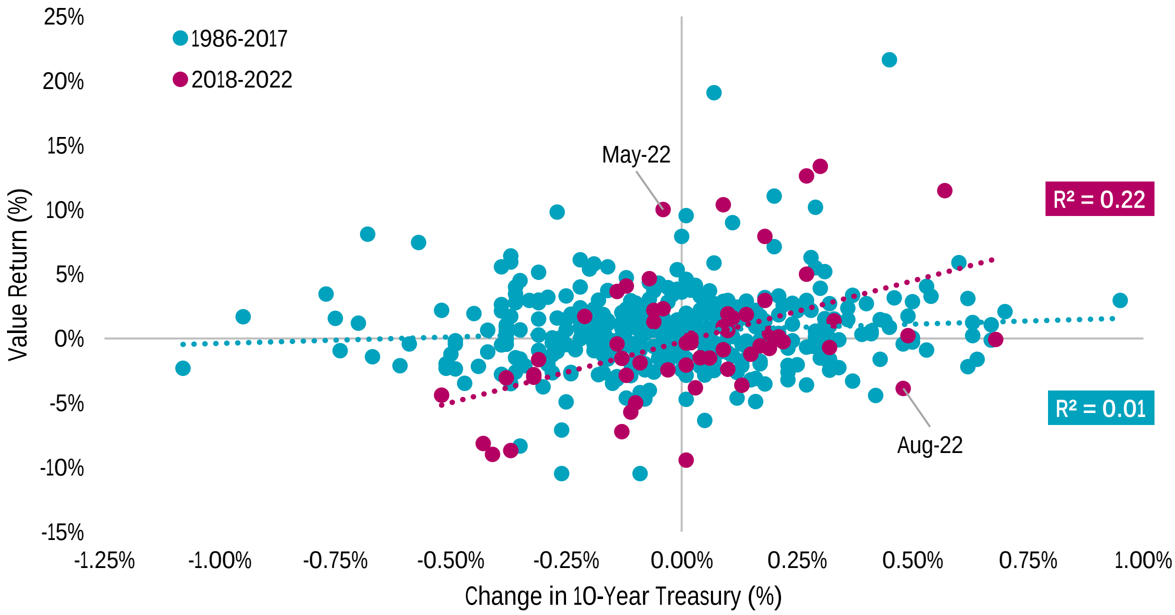
Value is not just a beneficiary of rising yields

A popular question is whether the latest rise in interest rates caused the recent value comeback. In our 2021 article, [7] we already investigated this notion and documented that while the relationship has been evident recently, it is much weaker over the long run and for longer-return horizons. In this section, we revisit this issue but approach it in a less technical way.

Figure 5 illustrates the relationship between US value returns and contemporaneous changes in the US 10-year Treasury yield. The chart confirms our previous research results as we find little to no evidence that the value factor correlates to interest rate changes for the period spanning from January 1986 to December 2017. However, the correlation has been higher over the last five years.

But even in recent years, the relationship has been far from perfect. In fact, changes in interest rates explain only a small fraction of the variation in the value returns. Interestingly, the last few months indicate that the relationship may have weakened again. For instance, May 2022 was an excellent month for value while yields slightly decreased, whereas August 2022 was a rather bad month for the factor even though interest rates increased by nearly 50 basis points.

Figure 5 | Value returns and interest rate changes



Source: Robeco, Refinitiv, FRED. The chart shows the relationship between U.S. value returns and contemporaneous changes in the U.S. 10-Year Treasury yield. The investment universe consists of U.S. constituents of the MSCI Developed Market Index. Before 2001, we use the FTSE World Developed Index (going back to December 1985). The sample period is January 1986 to October 2022.

Based on this analysis, we believe that the relationship between value returns and interest rates is not structural – or causal – but more a temporary phenomenon that might well provide some tailwinds for value in the months ahead. However, while the positive relationship between value and yields might persist for some time, possibly due to some self-fulfilling prophecy, we do not believe that interest rates will be the decisive factor for value in the years ahead. Furthermore, if investors have a tactical view on interest rates, we believe the best way to implement this would be

[7] Baltussen, G., Hanauer, M. X., Schneider, S., and Swinkels, L., September 2021, " What valuations and interest rates tell us about equity factors", Robeco article

through using instruments that provide direct exposure to interest rate changes, such as bond futures or interest rate swaps. This is more efficient and effective than trying to time value based on a rather noisy, indirect, and likely short-lived relationship.

Growth stocks do not necessarily have higher future growth

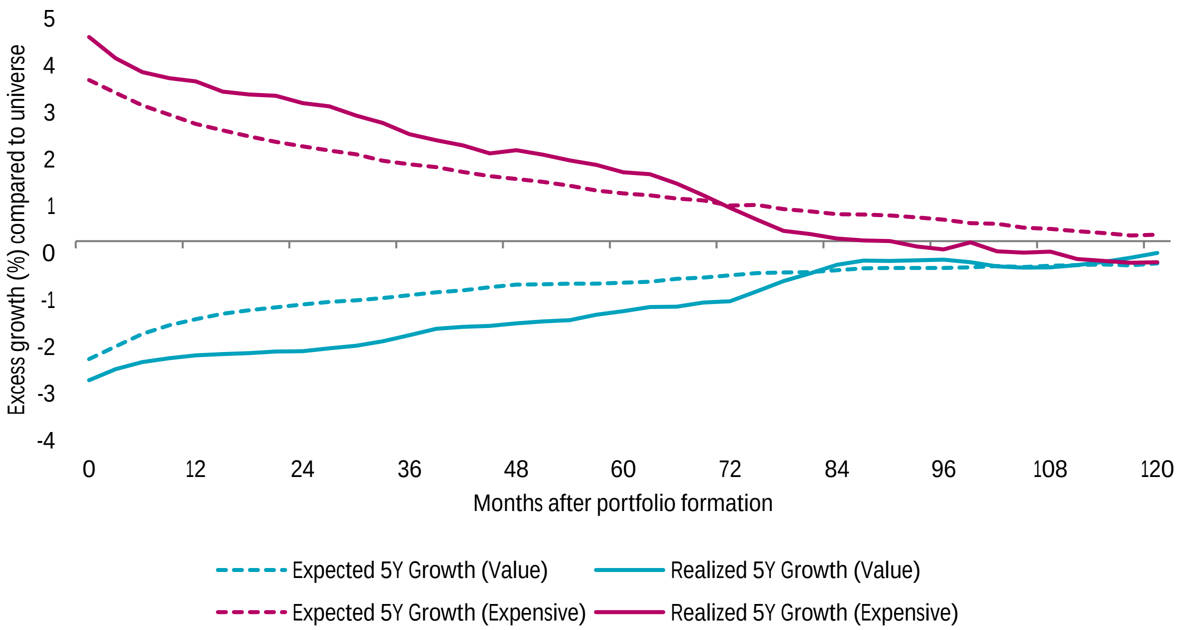
One reason many investors might believe that interest rates drive the returns of the value factor could be based on the argument that growth stocks exhibit longer duration than their value counterparts. Therefore, they should benefit from a lower discount rate being applied to their cashflows and suffer from rising yields.

We acknowledge this line of reasoning but believe that the relationship is ambiguous, meaning one could argue that value stocks are 'bond-like' as their prices are driven less by growth expectations and more by their earnings and dividend power in the years ahead. This would imply a negative relationship between value returns and interest rates.

That said, we looked into whether expensive stocks really do have higher future growth. In our analyses, we sort stocks based on valuation multiples and not on past or expected growth. And while companies with high historical growth in sales or earnings typically trade at higher multiples, future long-term growth is much harder to forecast.

Figure 6 depicts the previous five-year realized growth in earnings and analysts' long-term (five-year) earnings per share (EPS) growth expectations at portfolio formation (t=0), and up to ten years (t=120) after this for the cheap ('value') and expensive ('growth') quintile portfolios versus the universe. The chart shows that the spread for both historical growth and growth expectations between value and expensive firms is indeed highest at portfolio formation.

Figure 6 | Realized and expected earnings growth for Value quintiles after portfolio formation (AC)



Source: Robeco, Refinitiv, I/B/E/S. The chart shows the previous 5-year realized growth in earnings and the long-term (5-year) EPS growth expectations of analysts for the top (value) and bottom (expensive) quintile portfolios of the enhanced value strategy at portfolio formation (t=0) and up to ten years (t=120) after portfolio formation. For each measure and month, we compute the median for both the cheapest and most expensive quintile and deduct the universe median. The investment universe consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995). The sample period is January 1986 to October 2022.

Analysts expect expensive companies to generate about 4% *higher* EPS growth than the average company, while value firms are expected to deliver around 2.5% *lower* growth. These numbers are remarkably similar to the realized growth numbers that the two groups of stocks achieved over the five years before portfolio formation. Therefore, it seems that analysts extrapolate past growth into the future.

This difference in growth expectations is a key reason why investors are willing to pay a higher price for growth firms. However, these differences are not persistent. As shown in the chart, the spread in both growth expectations and realized growth rapidly converges in the years after portfolio formation, with value stocks experiencing improvements in growth realizations and expectations, whereas their expensive peers encounter deteriorating growth realizations and expectations.

After eight years, we see that the actual difference is less than 1%. Therefore, investors appear to be overpaying for the expected growth differences at portfolio formation, as analysts and other market participants extrapolate historical growth too far into the future. In other words, realized growth does not live up to expectations. As a result, we view these converging growth expectations as one of the driving forces behind the value premium.

Conclusion

Value has embarked on a solid comeback over the last two years. Given this strong performance, some investors might wonder whether it is still prudent to follow the style over the medium term. We firmly believe so, seeing that the valuation gap between cheap and expensive stocks remains extremely wide. This signals the potential for attractive returns going forward.

Furthermore, and in line with our findings in 2021, we observe that there is little empirical evidence for a long-run relationship between value returns and interest rates, even though there has been some correlation in recent years, and value may well benefit from the tailwinds stemming from rising yields. However, we would caution against extrapolating this relationship too much. The evidence is only apparent over a short-term period; the economic story is ambiguous at best; and there are signs that this eye-catching phenomenon could be rather short-lived as the relationship seems to have eased in recent months.

Finally, we also show how the value premium is driven by the overextrapolation of growth expectations and the underappreciation of value stocks. Investors overpay for expected growth at portfolio formation, while realized growth does not follow forecasted growth, which helps give rise to the value premium.

Appendix – factor definitions and construction

The enhanced value strategy and the calculation of the value spread follow the methodology described in Blitz, D. C., and Hanauer, M. X., January 2021, "Resurrecting the value premium", Journal of Portfolio Management.

Universe

The investment universe for the enhanced value factor consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995).

Factor definitions

The enhanced value strategy is based on a composite of book-to-market (R&D adjusted), EBITDA/EV, CF/P, and NPY metrics. Realized growth is computed as the current earnings minus earnings five years ago, scaled by common equity five years ago. Expected earnings growth is the median long-term EPS growth estimate from I/B/E/S.

Factor construction

Stocks are sorted into quintile portfolios based on the factor composites and the quintile portfolios are equal-weighted. Factor returns are the return spreads between the top and bottom quintile portfolios.

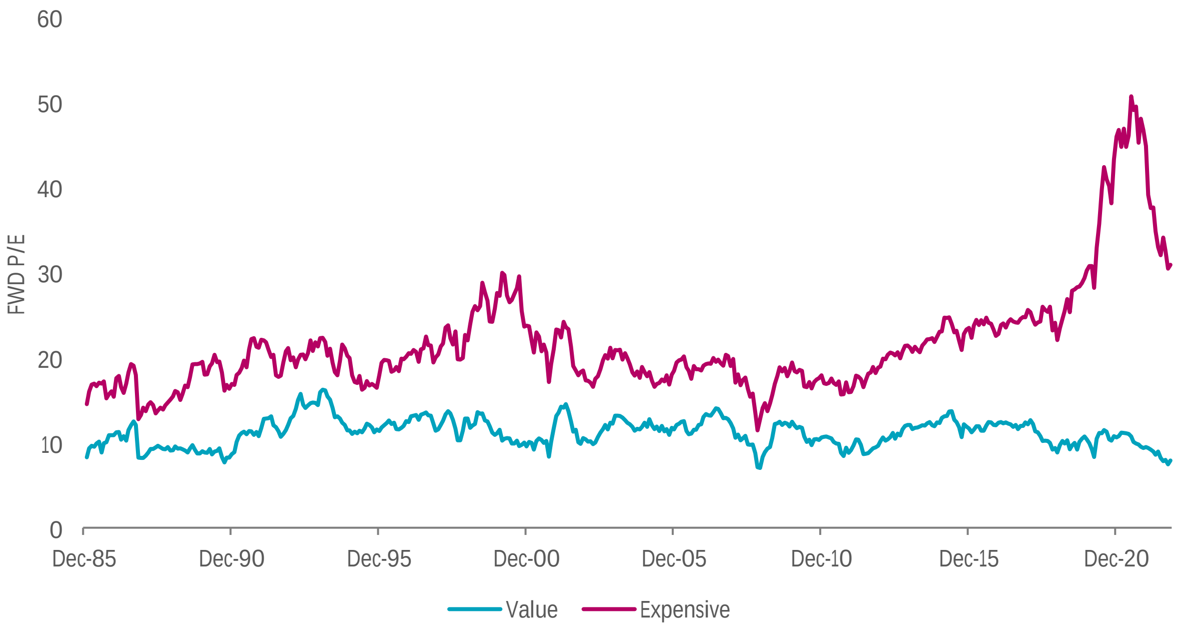
Neutralities

We apply region and sector neutrality for developed markets by independently ranking stocks within each region/GICS level 1 industry (11 sectors) bucket. Developed market regions are North America, Europe, and Pacific. For emerging markets, we use country neutrality.

Calculation valuation spread

For each multiple and month, we compute the median valuation multiple for both the cheapest and most expensive quintile and compute the spread as the ratio between the two. The three valuation multiples that we use are book-to-market (R&D adjusted), EBITDA/EV, and CF/P. For the composite valuation spread, we first standardize each of the three time series by dividing them by their median, and then average the three standardized spreads.

Figure A.1 | Absolute valuation levels of the enhanced Value factor



Source: Robeco, Refinitiv, I/B/E/S. The chart shows the FWD P/E ratio for the top (value) and bottom (expensive) quintile portfolios of the enhanced value strategy. The investment universe consists of constituents of the MSCI Developed and Emerging Markets indices. Before 2001, we use the FTSE World Developed index for developed markets (going back to December 1985), and for emerging markets, the largest 800 constituents of the S&P Emerging BMI at the semi-annual index rebalance (going back to December 1995). The value spread is the average spread of the book-to-market (R&D adjusted), EBITDA/EV, and CF/P. The sample period is January 1986 to October 2022.

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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, 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 Fund has not been registered with the Superintendencia del Mercado de Valores (SMV) and is being placed by means of a private offer. SMV has not reviewed the information provided to the investor. This document is only for the exclusive use of institutional investors in Peru and 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 your 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: Affolternstrasse 56, 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 Investor Information Documents (KIIDs), 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 relating to RobecoSAM-branded funds/services

Robeco Switzerland Ltd, postal address Josefstrasse 218, 8005 Zurich, Switzerland has a license as asset manager of collective assets from the Swiss Financial Market Supervisory Authority FINMA. RobecoSAM-branded financial instruments and investment strategies referring to such financial instruments are generally managed by Robeco Switzerland Ltd. The RobecoSAM brand is a registered trademark of Robeco Holding B.V. The brand RobecoSAM is used to market services and products which entail Robeco's expertise on Sustainable Investing (SI). The brand RobecoSAM is not to be considered as a separate legal entity.

Additional Information for investors with residence or seat in Taiwan

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Additional Information for investors with residence or seat in Thailand

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 temporarily deemed authorized and regulated by the Financial Conduct Authority. Details of the Temporary Permissions Regime, which allows EEA-based firms to operate in the UK for a limited period while seeking full authorization, are available on the Financial Conduct Authority's website.

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 September 27, 1996, as amended.