

THE TILT WITHIN VALUE: DYNAMIC VALUE FACTOR Weighting conditional on the value spread

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To learn more about our capabilities, please contact PGIM Quantitative Solutions by email at <u>contactus@pgim.com</u> or by phone in the US at +1 (866) 748-0643 or in the UK at +44 (0) 20-7663-3400 The "value" of value has been much discussed recently. Value stocks have sharply underperformed growth over the last three years, with the spread in valuations between the most expensive and least expensive stocks widening to record levels following the COVID-19 shock of 2020. We believe this phenomenon isn't a long-term or structural trend, with plenty of value available in value equities. The key to capturing the payoff for value is finding the right measure of value at the right time. To do this, we look at value factors dynamically, rather than statically, to determine how to best participate in value opportunities.

The Value Spread

Can value spreads predict how value stocks will perform in the future? We believe that there are insights to be gained from the spread, depending on the measures of value used. Our research finds that some measures of value perform better than others in different market environments. One group of measures that we label "expansive-value factors" performs better when the value spread between cheap and expensive stocks is typical. Another group of measures that we term "deep-value factors" performs better when the value spread is very wide. Our research further suggests that shifting the emphasis between the two groups as the value spread changes may best inform the return opportunity and capture the payoff for value. We calculate the value spread as the difference in median earnings-to-price (E/P) ratios between the cheapest and most expensive quintiles of stocks in the market when stocks are ranked on E/P. The monthly history of this value spread since 1987 for stocks in the Russell 3000° Index is shown in Figure 1. Examining the data, we can see several distinct periods when the market experienced stress and the value spread widened dramatically, including the tech bubble of the early 2000s, the Global Financial Crisis of 2008, and the COVID-19 shock of 2020. To determine the environment for value each month, we rank the value spread back in history and categorize it as "wide" if it is above the 90th percentile and "typical" otherwise.¹²

Figure 1: The Value Spread 1987-2021



Source: PGIM Quantitative Solutions and FTSE Russell. Data from Feb. 1987 – Dec. 2021.

Comparison of Value Factors

To examine factor performance conditional on the market environment, we calculated the average of the subsequent one-month returns of a factor long-short portfolio when the value spread is typical and when the spread is wide. We construct a long-short portfolio by ranking the universe of stocks each month within industries on a given factor and then forming a portfolio that is long the most attractive (cheapest) quintile of stocks and short the least attractive (most expensive) quintile of stocks. Stock returns are equally weighted and factor portfolio returns are calculated as the return of the long quintile minus the return of the short quintile.

When comparing how value factors perform in different value spread periods, we consider individual value factors, groups of value factors, and composites of value factors.

¹ We use only prior months when ranking the spread each month in order to avoid look-ahead bias.

² The value spread was above the 90th percentile in 20% (61/312) of the months during the 1996-2021 period analyzed.

Earnings vs. Book Value Factors

We first examined how two of the most widely used measures of value performed conditional on the value spread. Evaluating the Russell 1000° and Russell 2000° Indexes, we compared average monthly long-short returns of E/P and book-to-price (B/P) factors when spreads were typical and wide from 1996-2021 (Figure 2). For both small-cap and large-cap universes of stocks, E/P outperformed B/P when value spreads were typical, indicating that in most market environments, when earnings of many companies are growing, E/P is a good economic measure of value and therefore a good predictor of returns. During periods of market stress, however, when earnings of many companies deteriorate or turn negative, E/P is not as useful since it does not signal whether the poor earnings are temporary or permanent. During such periods, when value spreads are wide, book value is a more meaningful indicator of long-term sustainability. Stocks that appear expensive on E/P but measure cheap on B/P tend to rally when stress abates.

Figure 2: B/P and E/P Conditional on the Value Spread: 1996-2001



Source: PGIM Quantitative Solutions and FTSE Russell. Data from Jan. 1996 – Dec. 2021.

Expansive-Value vs. Deep-Value Factor Groups

We next examined how our other measures of value performed conditional on the value spread and found that some behaved closer to E/P, while others behaved similar to B/P. To capture more granular results, we partitioned our composite of value factors into two sub-groups and categorized the group containing E/P as expansive value and the group containing B/P as deep value. For each factor group, stocks were scored as the average of their scores on the group's individual factors and then ranked to form a long-short portfolio.



Figure 3: Expansive and Deep Value Conditional on the Value Spread: 1996-2001

Source: PGIM Quantitative Solutions and FTSE Russell. Data from Jan. 1996 – Dec. 2021.

Figure 3 compares the average monthly long-short returns of the expansive and deep factor groups in each of the value spread environments. Similar to our assessment of E/P and B/P, when value spreads are typical expansive value outperforms deep value. But after times of market stress, when value spreads are wide, deep value is the winner.

Static vs. Dynamic Value Factor Composites

We lastly considered the potential benefit of forming a composite of value factors by tilting portfolio exposure between the expansive- and deep-value factor groups. The contrasting performance between the two groups suggests that shifting the emphasis between them may better capture the payoff to value. To examine this, we compared a static and a dynamic strategy. In both strategies, stocks are scored monthly as a weighted average of their scores on each factor group. The static strategy keeps the weights on the groups equal. The dynamic strategy shifts weights from the expansive-value group of factors to the deep-value group of factors as the value spread widens and back toward the expansive-value group as the value spread narrows.

Figure 4: Static and Dynamic Value Composite Performance: 1996-2021



Source: PGIM Quantitative Solutions and FTSE Russell. Data from Jan. 1996 – Dec. 2021.

Figure 4 shows the cumulative values from 1996 through 2021 of long-short portfolios for the static and dynamic strategies. The results of adjusting the weightings indicate that employing a dynamic strategy that shifts weights between expansive- and deep-value factors as the value spread changes can enhance portfolio performance relative to a strategy that keeps the factor weights static.

The Bottom Line

As we enter 2022, and following several challenging years for value, we think there is a significant opportunity for a recovery in value stocks, which is supported by our research and recent performance. We think the most effective means of exploiting the historically wide spread in valuations between cheap and expensive stocks is by understanding how payoffs can vary depending on market backdrop and utilizing various dynamic measures to capture factor payoffs at different points in time. Sharpening our model's fundamental inputs and identifying new approaches in evaluating existing factors to produce profitable investment opportunities is a natural evolution in quantitative investing. We believe ongoing improvements, such as dynamic weighting of value factors to allow us to better capture value in the long run, will enhance the ability of our strategies to navigate changing market conditions and generate attractive returns.



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