



# Decarbonizing Everything

Climate metrics are not one size fits all. Careful choice of metrics pays off in portfolio performance.

Market participants operating in an era of climate change are demanding more data to measure upstream and downstream climate risk and opportunities. How can investors use these different approaches to climate data in portfolio construction to improve outcomes?

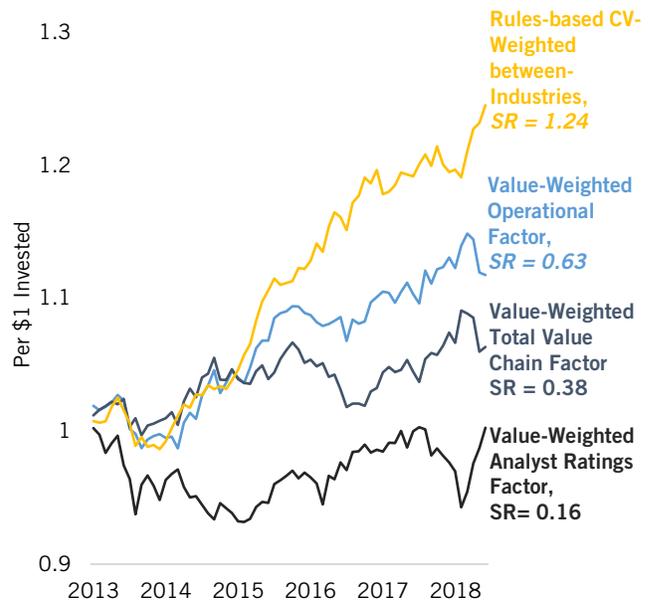
We test three types of climate data: (1) widely reported operational carbon intensity, (2) modeled total value chain carbon intensity (including supply chain and the use of products and services), and (3) analyst ratings assessing the management of – and performance on – total value chain carbon intensity. Our goal is to understand the circumstances in which they each add value to portfolio construction. There is a simple and surprisingly effective way to tell which data matters most for a given industry. Put simply, metrics that vary widely across the firms within an industry tend to matter more. We find that the “coefficient of variation” (CV) for each metric in each industry is effective at predicting returns.

These (and other) insights for determining merit and applicability of climate data can be applied in rules-based trading models. In particular, we test a systematic process for selecting different climate metrics and forming portfolios. Our model chooses a metric of operational or total value chain carbon intensity for half of the industries and uses analyst ratings for the others. In addition to using the chosen climate metrics to sort stocks within each industry, we also use the CV of the chosen metric to weight across industries for a broad market strategy. As seen in the figure above, our rules-based and industry-specific approach with CV-weighting between industries improves both the returns and Sharpe ratios of the underlying factors.

Playing to the strengths of various types of climate data can help investors design strategies to manage climate risk while increasing risk-adjusted returns. By using more sophisticated rules, we suspect investors could produce even better results.

For more on this topic, see our 2020 working paper on SSRN: “**Decarbonizing Everything: Climate Data, Industry Returns, and Portfolio Construction**” by Alexander Cheema-Fox, Bridget Realmuto LaPerla, George Serafeim, David Turkington and Hui (Stacie) Wang.

## Decarbonization factors: Cumulative alpha and Sharpe ratios



Note: The graph presents cumulative abnormal returns for \$1 investment in the decarbonization factors from July 1, 2013 to December 31, 2018 for three value-weighted portfolios constructed with different data approaches and rules-based coefficient of variation-weighted (CV-weighted) portfolio, leveraging all three data types. The abnormal returns are estimated from regressions based on non-overlapping monthly data, controlling for market, size, value, profitability, investment, and momentum factors. Sharpe ratios are based on abnormal returns. Source: State Street Global Markets, MSCI market data, S&P Trucost, MSCI ESG ratings and Kenneth French data library.

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