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Restricted Yet Refined: Enhanced Strategies for Sustainable Investors

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- Many sustainable investors mistakenly believe that their non-financial objectives are incompatible with enhanced equity strategies, because the associated restrictions cause too much tracking error.
- But an intuitive modification to conventional portfolio construction can restore appeal of enhanced strategies in the presence of even significant restrictions on the portfolio or the investment universe.
- The method also provides insight in performance analysis.

Many sustainable investors assume that enhanced equity strategies, which are designed to consistently outperform but still closely track a broad market index, are out of their reach. They assume that their non-financial ESG considerations, expressed as constraints on the investment universe or the portfolio, would consume too much of the tracking error budget, leaving little room for return enhancement. While some asset owners flirt with the idea of an enhanced strategy managed around a custom sustainable benchmark, most ultimately balk at the cost and the loss of transparency.

But sustainable investors shouldn't give up on enhanced. In this note, we demonstrate a modification to the conventional portfolio construction approach that, in the presence of significant non-financial constraints, can help to restore and stabilize alpha generation and add insight in performance analysis.

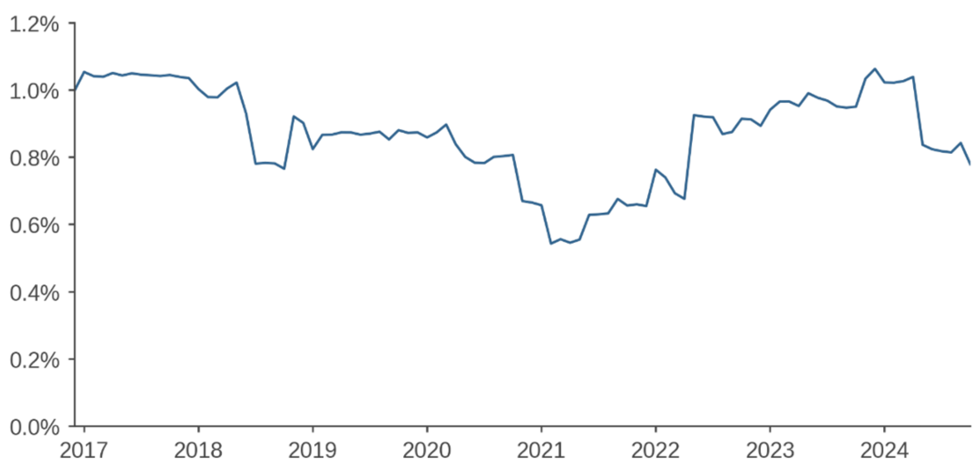
Moreover, while our motivating example is that of a sustainable investor, the insights we discuss also apply to investors who face frictions that make it difficult to manage their active risk, including lack of access to a local market or regulatory restrictions.

Problem

Sustainability considerations may generate levels of tracking error that some investors assume are incompatible with conventional enhanced strategies, which often limit active risk to only 1-2% annualized, sometimes less.

Figure 1: Realized Tracking Error—Hypothetical MSCI World Portfolio with Sustainability Restrictions

Two-year rolling windows; annualized



Realized tracking error associated with a minimum ex ante TE portfolio generated after imposing sustainability restrictions in the Appendix on the MSCI World Index portfolio. Source: Acadian. For illustrative purposes only. The above does not represent investment returns generated by actual trading or an actual portfolio. Hypothetical results are not indicative of actual future results. Investors have the opportunity for losses as well as profits.

Figure 1 illustrates this concern through a hypothetical example. The line charts the realized active risk generated by imposing a combination of Paris-Aligned Benchmark (PAB) and other sustainability-oriented restrictions on the MSCI World Index (as detailed in the Appendix).[1] Even though this hypothetical portfolio minimizes *ex ante* active risk upon each monthly rebalancing date using a sophisticated risk model, its realized tracking error still averages 0.9% over a ten-year sample period. Moreover, the active risk associated with the constraints varies materially over time, from 0.6% to more than 1% after December 2021 when the Russia-Ukraine war drove up fossil-fuel prices, increasing the impact of the PAB restrictions.

While that tracking error might seem daunting, it does not actually measure the expected cost of the restrictions. That, instead, depends on how the constraints affect *ex ante* alpha. Put intuitively, if the restrictions naturally push the benchmark *closer to* the positioning of the unconstrained enhanced strategy, then they may have no cost (they may not "bind"). On the other hand, if the restrictions push the benchmark portfolio's positioning *away from* the unconstrainted enhanced strategy, then it may not be possible to recover the lost alpha given the original tracking error budget, and that cost could be material.

Figure 2 shows that in the case of our example, the sustainability restrictions are, indeed, costly. The light-blue trace shows the impact on alpha exposure of imposing the restrictions on the original hypothetical enhanced strategy without making any other adaptations. While the realized tracking error remains within the original risk target, at 1.35%, the constraints would often sacrifice 20% of the unconstrained alpha and sometimes as much as 40%.

Not only might the ESG restrictions have a measurable cost, but they could also "break" a conventional enhanced strategy. If the expected active risk associated with them exceeds an enhanced strategy's total risk budget, then portfolio construction won't solve, and a decision must be made as to how to proceed.

Solution

But an intuitive re-specification of the enhanced strategy can ensure that portfolio construction will solve, may restore more appealing alpha exposure, and offers insight when it comes to performance attribution: Instead of *fixing* the total tracking error budget, simply let it float as a function of the minimum *ex ante* active risk required to impose the restrictions.

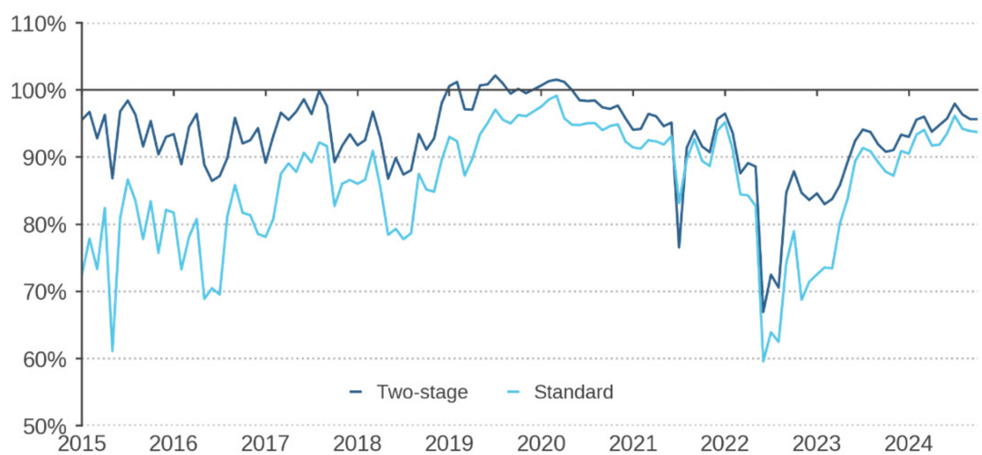
To implement the approach, portfolio construction has two steps:

Step 1—solve for the tracking error required for sustainability: Specifically, find the TE-minimizing portfolio referenced in Figure 1, which doesn't incorporate alpha or financial risk controls. Record the tracking error of that portfolio.

Step 2—solve for the enhanced portfolio: Set the overall tracking error budget by starting with the manager's preferred budget for enhanced strategies and augmenting it by the estimated active risk associated with the sustainability restrictions computed in Step 1.[2] Then, maximize *ex ante* alpha subject to this overall tracking error constraint, financial risk controls, and the ESG constraints.

Figure 2: Alpha Exposures of Hypothetical Socially Responsible Enhanced Strategies

Relative to an unconstrained enhanced strategy that targets 1-2% realized tracking error



Light-blue trace: Hypothetical enhanced portfolio benchmarked to MSCI World that targets 1-2% realized tracking error and incorporates sustainability restrictions described in the Appendix. Dark-blue trace: Hypothetical two-step enhanced portfolio constructed based on the methodology in the text where the tracking error budget each period augments the original risk budget by the amount strictly necessary to satisfy the sustainability restrictions. Source: Acadian. For illustrative purposes only. The above does not represent investment returns generated by actual trading or an actual portfolio. Hypothetical results are not indicative of actual future results. Investors have the opportunity for losses as well as profits.

[1] For information about PAB restrictions, see Commission Delegated Regulation (EU) 2020/1818 of 17 July 2020 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards minimum standards for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks, Article 12(1) (a) to (g). The additional sustainability restrictions reflect European Securities and Markets Authority requirements for funds labeled with "Environmental" or "Sustainability" related terms. See https://www.esma.europa.eu/document/guidelines-funds-names-using-esg-or-sustainability-related-terms. See Appendix for further information on the restrictions.

[2] Expressed in notation, if *i* is the enhanced manager's preferred active risk absent sustainability considerations, and $\sigma_R(t)$ is the *ex ante* active risk of the portfolio minimizing tracking error subject to sustainability restrictions, then define the total tracking error budget as $\sigma_{Total}(t) = \sqrt{\sigma_R(t)^2 + i^2}$.

To showcase the approach, we can build on our hypothetical example by creating a "two-step" enhanced portfolio that each period augments the risk budget of the original sustainable enhanced strategy by the amount strictly necessary to satisfy the PAB constraints. The dark blue line in Figure 2 then shows the alpha exposure of the resulting portfolio relative to the unconstrainted (not PAB-aligned) enhanced baseline. Two features stand out.

First, the dark-blue line (almost always) lies above the light-blue line. In other words, the two-step portfolio restores much of the alpha exposure lost from imposing the sustainability restrictions into the original sustainable enhanced strategy. This improvement isn't cost-free, however.[3] By construction, the two-step portfolio has a higher active risk budget, and, accordingly, generates higher realized tracking error than the original PAB-aligned enhanced strategy. But the increase is modest, 1.52% for the two-step versus 1.35% for the original, and investors seeking return enhancement commensurate with the unconstrained baseline may find the tradeoff of tracking error for alpha exposure appealing.

Second, the alpha exposure of the two-step portfolio is noticeably more stable than that of the conventional enhanced strategy, consistent with intent.

Attribution Benefits

The two-step approach offers additional benefits for performance attribution. Analysis of the tracking error-minimizing portfolio, which is generated in the first step, can lend valuable insight into *how* the socially responsible restrictions affect risk and alpha generation. Figure 3 illustrates based on our hypothetical example, through a comparison of contributions to benchmark-relative active returns for the tracking-error minimizing portfolio (grey) and the two-step enhanced strategy (blue).

The chart drills down into performance from 2022, a year in which many climate-aware investments struggled as fossil-fuel prices spiked following Russia's invasion of Ukraine. Across the x-axis, the bars show contributions from stockholdings sorted into quintiles by carbon intensity. Within each bar, we further break out the contributions into allocation effects to brown or green stocks (dotted) and stock selection within each category (solid).

The tracking-error minimizing portfolio only reflects the impact of the PAB design choices. We would expect these to impact performance through repricing of the most brown and green stocks rather than via pervasive stock selection effects across the entire market. Indeed, we can see that most of this portfolio's active returns come from brown stocks: the portfolio naturally underweights this quintile, translating into a negative allocation effect, and it further tilts away from the relatively brownest stocks *within* the quintile, leading to a negative selection effect. Beyond the brown stocks, however, the portfolio's positioning does not seem to correlate with meaningful allocation or selection effects.

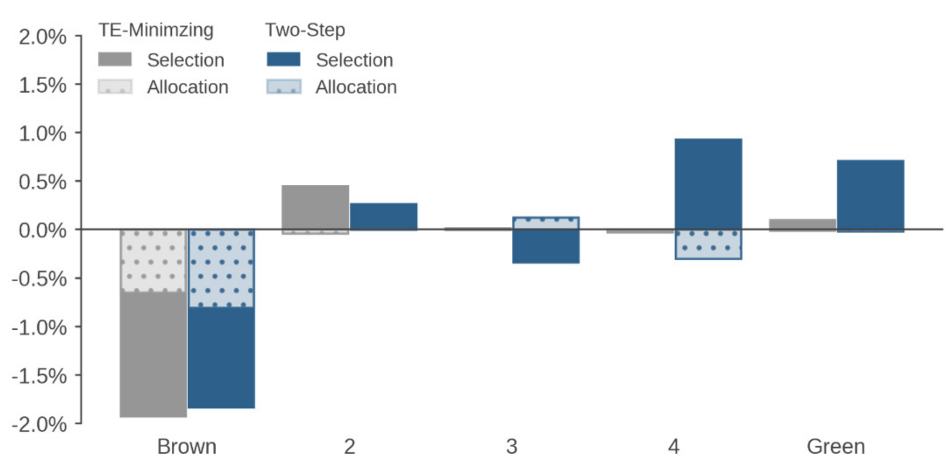
The blue bars show that the two-step portfolio also suffered material underperformance from active exposure to the brownest stocks, just as did the tracking error-minimizing portfolio. The similarity of the effects suggests that underperformance due to the underweights of the brownest stocks was largely unavoidable.

In contrast, looking towards the right, we see that the two-step enhanced strategy enjoyed material positive benchmark-relative outperformance from the greenest quintiles, especially through stock selection. This suggests that the alpha model paid material dividends in picking and choosing among green stocks during a difficult year for sustainable investments.

At a high level, one way to think about the results is that incorporation of the alpha model into an ESG-constrained portfolio provides a guardrail against deleterious financial effects of non-financial restrictions.

Figure 3: Contributions to Hypothetical Active Returns by Carbon Intensity Quintile—2022

Allocation and selection effects across and within carbon intensity quintiles



Stocks grouped into quintiles by carbon intensity (ratio of scope 1+2 emissions to revenue). Grey bars correspond to a portfolio that minimizes ex ante tracking error associated with socially responsible restrictions outlined in the Appendix as applied to an MSCI World portfolio. Blue bars correspond to the two-step enhanced portfolio described in Figure 2. Source: Acadian. For illustrative purposes only. The above does not represent investment returns generated by actual trading or an actual portfolio. Hypothetical results are not indicative of actual future results. Investors have the opportunity for losses as well as profits.

[3] Moreover, even with the two-step approach, it may not be possible to recover all of the alpha. In general, restrictions have costs. For example, there may be no substitute for a stock with a particularly attractive alpha forecast that is screened out of the portfolio.

Conclusion

Sustainable investors shouldn't give up on enhanced equity strategies. While restrictions associated with their non-financial objectives often generate significant active risk compared to the total tracking error budgets usually permitted in enhanced strategies, that does not, in-and-of-itself, imply the restrictions are costly. Moreover, a simple change to portfolio construction may help to restore return enhancement and provide greater insight in performance attribution.

Appendix: Sustainability Restrictions Applied to Hypothetical Portfolios[4]

Investment Universe Exclusions. Companies that:[5]

- Derive revenue from manufacture of tobacco products or their key inputs (but not their packaging or distribution).
- Are deemed to have any involvement in the production of controversial weapons (e.g., cluster munitions, anti-personnel landmines, biochemical and nuclear weapon systems).
- Are in violation of the UN Global Compact or OECD Guidelines for Multinational Enterprises.
- Derive more than 1% of revenue from the mining and extraction of thermal coal.
- Derive more than 10% of revenue, in aggregate, from oil & gas extraction, refining, pipelines and transportation, equipment and service provision, or retail distribution.
- Derive more than 50% of revenue from fossil fuel power generation, including thermal coal, liquid fuel, and natural gas.
- Are perceived to be involved in severe or very severe environmental controversies.

Portfolio-Level Constraints:

- 50%+ benchmark-relative reductions in:
  - Scope 1+2 carbon emissions as measured by both weighted average carbon intensity (WACI) and carbon footprint (EVIC).
  - Scope 3 carbon emissions exposure as measured by both WACI and EVIC. Due to data limitations, this constraint is phased in from July 2021.
- Decarbonization glidepath: maximum allowable carbon exposure (as measured by weighted average scope 1+2 carbon intensity) at least 20% below the benchmark as of December 31, 2020, with annual reductions of 7% thereafter.
- At least 1.2x benchmark weight in securities of companies whose decarbonization targets meet SBTi standards.
- At least 1.1x benchmark weight in securities that derive more than 20% of revenue in products or services that contribute to environmental or social objectives consistent with the UN Sustainable Development Goals.

[4] Please contact us for additional details.

[5] Revenue and controversy data supplied by MSCI. MSCI data copyright MSCI 2025. *All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.*

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