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Don't be blind just because a benchmark is Paris-aligned

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Limiting global warming to "well below" 2°C – preferably below 1.5°C – as agreed in Paris in 2016 is one of the main challenges of our generation. And as more portfolios align with the Paris targets, confusion may arise from the diversity of available strategies. To overcome the noise, we research Paris-aligned objectives to better understand the sources of risk in low tracking error portfolios using a two-step factor-based process that balances Paris goals with return objectives.

In 2020, the EU set out minimum standards for Paris-aligned benchmarks and climate transition benchmarks. They combine exclusions with self-decarbonization and demand greenhouse gas emissions below those of the investable universe. Furthermore, so-called 'high-impact sectors' should not be underweighted relative to a standard equity benchmark.[1]

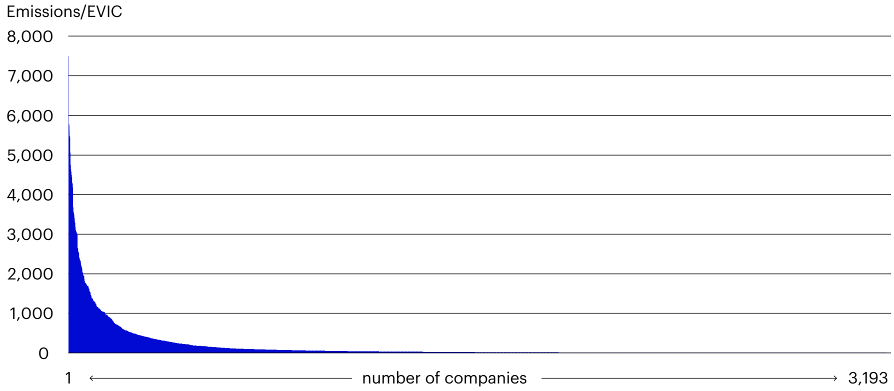
An EU Paris-Aligned Benchmark (PAB) requires GHG emissions to be 50% below those of the benchmark, whereas a difference of 30% is sufficient for an EU Climate Transition Benchmark (CTB). The main goal of both benchmark types are lower greenhouse gas (GHG) emissions. In addition, both require an annual decarbonization of 7% p.a. (geometric)[2] as well as some exclusions: For CTBs, companies involved in controversial weapons or tobacco production must be excluded, as well as companies violating the UN Global Compact, the OECD guidelines for multinational enterprises or the EU environmental objectives. PABs add further restrictions in the field of fossil energies – in terms of both exploration and power generation.

Paris-aligned investments: Where do we stand?

A key component of the guidelines is the decarbonization pathway. Due to the skewed distribution of the carbon footprint, as shown in figure 1, divesting from a

Divesting from a handful of companies can significantly reduce the carbon intensity of the portfolio.

Figure 1
Distribution of the GHG footprint



Distribution of CO_2 emissions/EVIC in a global equity universe (3,193 companies), as of December 2021.
Source: Invesco, ISS.

handful of companies can significantly reduce the carbon intensity of the portfolio. Therefore, only a small active risk budget is needed.[3] As for exclusions, simple ones could lead to significant biases,[4] but most Paris-aligned portfolios are optimized to avoid sector and country tilts without harming their ESG characteristics.[5]

However, none of the EU standards is forward-looking, which leads to a debate about their effectiveness.[6] While investments into already green companies probably don't further reduce carbon emissions (as they are already low for these companies), investing in companies on a transformation trajectory could do so. However, such an approach might produce a portfolio overweighting high emitters and would require regular checks to ensure they are really changing. To strike a balance between a green portfolio and supporting climate transition, Paris-aligned portfolios require minimum investments in certain sectors.

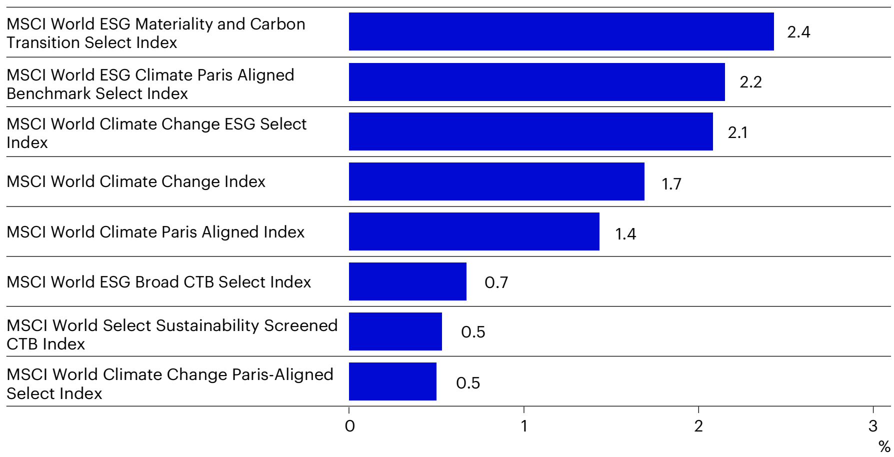
Decomposing the impact of guidelines

There are many different Paris-aligned benchmarks, whose index constituents are selected and weighted to be aligned with the global warming targets of the Paris Agreement. These readily available benchmarks are convenient to allocate capital towards a low-carbon, climate-resilient economy. However, they come with a significant degree of active risk. Figure 2 shows the ex-ante tracking error of various Paris-aligned benchmarks relative to their parent indices. Active risk varies considerably, ranging between 0.5% and 2.4%. While certain indices, such as the MSCI World Climate Change Paris-Aligned Select Index, aim to fulfill only the minimum requirements, others surpass them in order to fully align with the Paris Agreement and reduce exposure to climate risks.

The specific sustainability goals and their effects on active risk can be difficult to discern due to the multitude of available options. To address this, we have grouped possible index requirements into three categories:

1. **Decarbonization schedule:**
   50% reduction in GHG emissions relative to the parent index as of 2019, plus an additional 7% year-on-year reduction in GHG emission intensity.

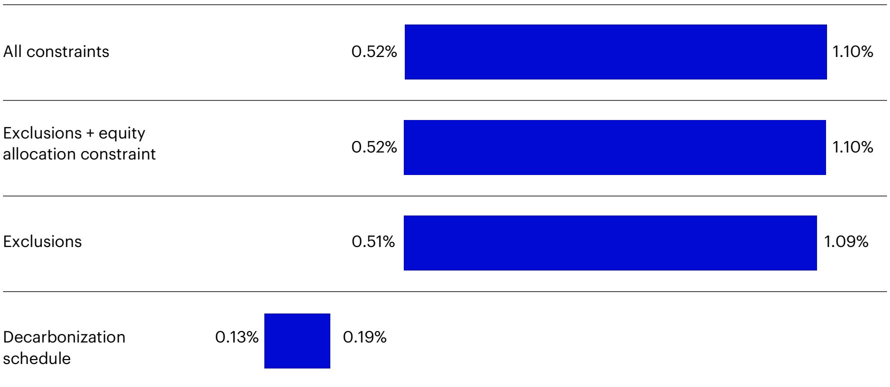
Figure 2
Active risk of Paris-aligned benchmark indices



Data as of March 2023. Active risk relative to the underlying parent indices.
Source: Invesco, MSCI.

> The specific sustainability goals and their effects on active risk can be difficult to discern.

Figure 3
Tracking error of Paris-aligned portfolios relative to the MSCI World
(95% confidence intervals)



Simulations based on monthly optimizations from December 2019 to December 2022.
Source: Invesco.

2. **Exclusions:**
   Eligible companies have to adhere to the EU Taxonomy's "Do No Significant Harm", cannot be involved in controversial weapons, tobacco production or violate the UN Global Compact guidelines. There are also limits for revenue from fossil fuel exploration, extraction and distribution.

3. **Equity allocation constraint:**
   EU Paris-Aligned Benchmarks must contain certain basic sectors, primarily ones with a strong impact that are high-emitting but crucial for the overall health of the economy. This ensures capital allocation into these industries while focusing on the cleaner names to finance the transition.

To untangle the influence of these requirements on active portfolio risk, we constructed index portfolios for each of the sub-requirements. Specifically, these minimize the expected tracking error relative to the MSCI World Index while taking into account the specific Paris constraints. We placed stringent limits on exposures to other variables as well as individual positions to ensure that the portfolios avoid industry-specific bets or covariance-induced trades. This decomposition offers flexibility to address the most important investing preference.

Figure 3 shows the 95% confidence intervals for ex-ante tracking error; according to the simulations, a Paris-aligned decarbonization schedule can be achieved with an average tracking error of 16 bp.[7] The elimination of certain companies has the greatest impact, resulting in a tracking error of 80 bp on average. Adding the equity allocation constraint or the decarbonization schedule does not have much of an impact, resulting in an addition tracking error of approximately 81 bp for all Paris alignment constraints.

Above and beyond: Paris alignment and factor investing

It appears that the main elements of Paris alignment can be implemented with modest levels of active risk. This leaves room for the inclusion of return-seeking elements, using key factors: Quality, Momentum and Value.

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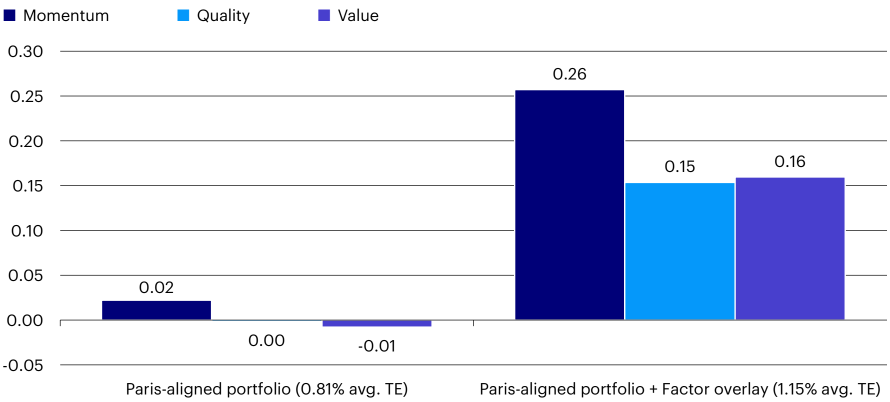
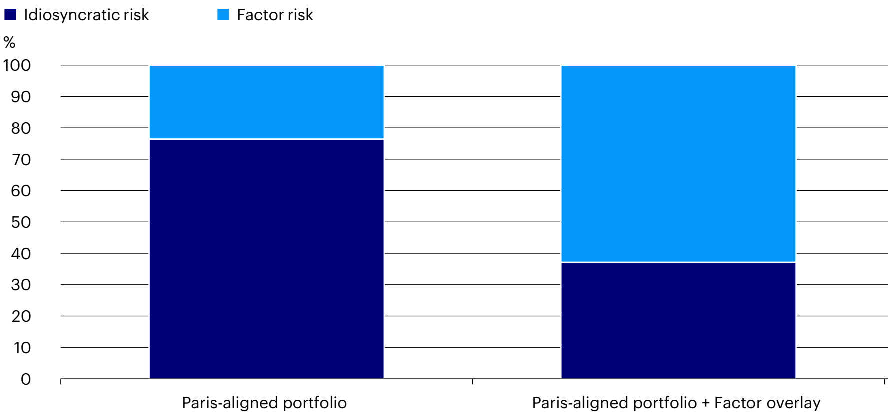
Figure 4
Average active factor exposures vs. the MSCI World



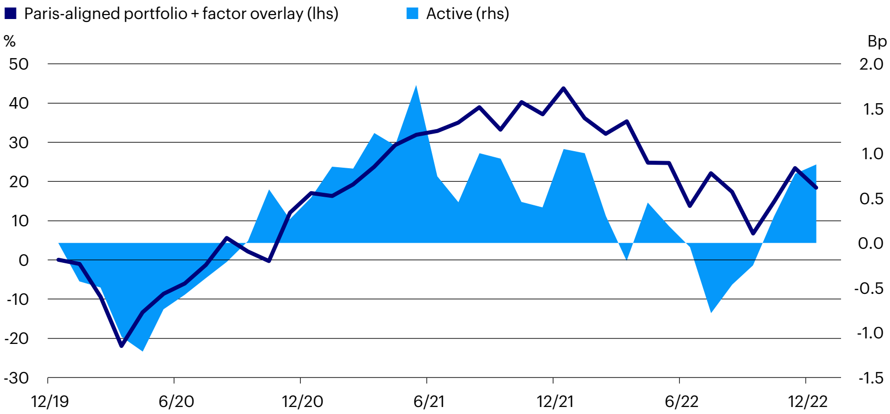
Factor exposes measures in standard deviations. Simulation period: December 2019 to December 2022.
Source: Invesco.

Figure 5
Decomposition of tracking error vs. the MSCI World



Simulation period: December 2019 to December 2022.
Source: Invesco.

Figure 6
Cumulated portfolio performance and active return



Simulation period: December 2019 to December 2022.
Source: Invesco. **Past performance does not predict future returns. There is no guarantee that the simulated results will be achieved in the future.**

To enhance the active return of the strategy, we followed a two-step procedure. First, we constructed a reference portfolio applying the minimum standards used by Paris-aligned benchmarks with a minimal tracking error verses the MSCI World. Then we applied an active multi-factor investment process. This layered approach has several benefits: It distinguishes between the effects of the Paris alignment criteria and the multi-factor management on the risk budget, prevents distortion of the optimal portfolio and bases the factor-focused optimization on a benchmark that already incorporates the climate-related constraints.

The resulting portfolio is entirely Paris-aligned, with a beta of 1 to the MSCI World Index and an active risk between 0.6% and 1.3% throughout the simulation history. As figure 5 shows, almost two-thirds of its tracking error can be attributed to style factors, whereas factors do not contribute significantly to the tracking error of the simple Paris-aligned portfolio.

In our simulations, the combined portfolio delivered attractive outperformance of 90 bp – on par with the active risk taken and despite an overall challenging investment environment for systematic equity strategies. Overall, this approach appears to strike a balance between climate-conscious investing and factor enhancement, providing an interesting concept for Paris-aligned investing.

Conclusion

Paris alignment requires any array of portfolio characteristics. The decarbonization path, exclusions and minimum sector positions are meant to reward low-emitting companies and support companies on their climate transition journey.

Paris alignment can be made compatible with financial objectives to produce portfolios that fulfil the key criteria of the Paris Agreement without compromising on investment return. A layered approach to portfolio construction may balance sustainability preferences with return objectives, providing a flexible and dynamic solution that can be adapted to different investment strategies and asset classes.

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Notes

1 Commission Delegated Regulation (EU) 2020/1818, available under https://eur-lex.europa.eu/legal-content/en/txt/pdf/?uri=CELEX:32020R1818&rid=1
2 To be comparable, emissions are divided by company size, leading to the so-called 'GHG footprint'. Company size can be measured either by sales or by enterprise value including cash (EVIC), as used by the EU. As the inflation of asset values can lead to a reduction in the GHG footprint merely by increase of the denominator, the regulations prescribe disinflating it via the average change in EVIC of the index constituents.
3 cf. Anderson et al. (2016).
4 cf. Alessandrini & Jondeau (2020).
5 cf. Alessandrini & Jondeau (2021).
6 cf. Blitz & Swinkels (2020). Kolle et al. (2022) describe how to incorporate a scenario-based temperature alignment which goes beyond standard Paris alignment characteristics.
7 Andersson et al. (2016) have argued that a 50% reduction in carbon can be achieved with little to no tracking error.

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