Scientific Portfolio Market Review

April 2025

Scientific Portfolio
An EDHEC Venture

Market Upheaval Drives Shift in Fund Manager 'Winners' and 'Losers'

Introduction

With dramatic developments unfolding in equity markets, asset allocators are closely scrutinizing the performance of their active managers. Moreover, eyes already turn towards larger strategic questions. While long-term investors should of course pursue a disciplined and consistent approach, periods of substantial upheaval often provoke a re-evaluation of portfolio construction, strategy and risk management. Indeed, subjects such as factor exposure and market concentration were already top-of-mind as we headed into the year.

With these concerns and challenges in mind, this edition of *Market Review* examines US active manager relative performance to see how the characteristics of 'winners and losers' shifted within the first few weeks of the still-continuing downturn now becoming colloquially known as the 'Trump Slump'. Even between late February and mid-March, we already find:

- 'Top quintile' manager performance relative to the market declined dramatically on a three-year basis, falling from around 2% above benchmark per annum to 0.18% (net of fees). The same, interestingly, was not true of the bottom quintile — whose relative performance was largely unaffected.
- The composition of the top quintile did also change somewhat: 81% of the strategies that were in this group in late-February remained (on a three-year basis) in mid-March.
- While the overall risk factor profile of the top and bottom performers retained a similar pattern, the relevant tilts became weaker, and performance attribution analysis tells a similar story.
- There was also a notable change in terms of diversification in winners' portfolios, with the 'Effective Number of Stocks' (ENS) in top quintile managers' portfolios increasing from 23.8 to 29.3 and the 'Effective Number of Industries/Sectors' increasing from 2.4 to 3.0.

The picture continues to evolve, with a further and deeper drawdown occurring in April 2025. As such, the conclusions remain under continual review. In the meantime, investors can keep an eye on the specific exposures and characteristics of their own equity managers and portfolios on the Scientific Portfolio Platform.

Examining Active Managers

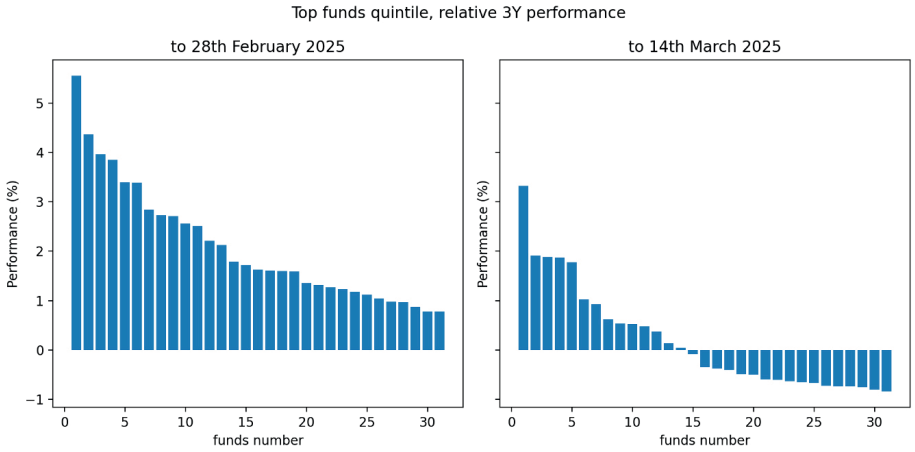
For this analysis, we examined data from 157 strategies (source: Morningstar) covering US equities. Since defining 'active management' is something of a grey area, strategies were selected based not on their deviation from the benchmark but on their stated fees (50 basis points or higher). This ensures a focus on strategies where investors are, essentially, paying a premium for manager 'skill' and should fairly expect a degree of discretion, as opposed to a non-passive but purely systematic approach.

In terms of timeframes, three-year results to two different dates were used: 28th February, prior to the beginning of the relevant market drawdown; and 14th March, after the first phase of decline (but before a second slump commenced in the first week of April). The focus on three-year numbers, not on short-term results, is intended to surface more meaningful findings and consider the extent to which the medium-term picture can be shaken by two weeks of volatility.

Three-Year Performance, Factor and Sector Exposures

Firstly, and most obviously, top quintile performance (relative to benchmark) has been hugely impacted, as shown in Exhibit 1. The average relative return at the earlier date was 2.10%; by 14th March, this number had dropped to 0.18%. This drop is particularly notable when we consider that the relative performance of the bottom quintile has not visibly changed (see Appendix), highlighting the extent to which the shift in market conditions particularly impacted strategies that were favourably positioned in 2022-2024.

Exhibit 1: 'Top quintile' funds: three-year performance p.a. versus benchmark

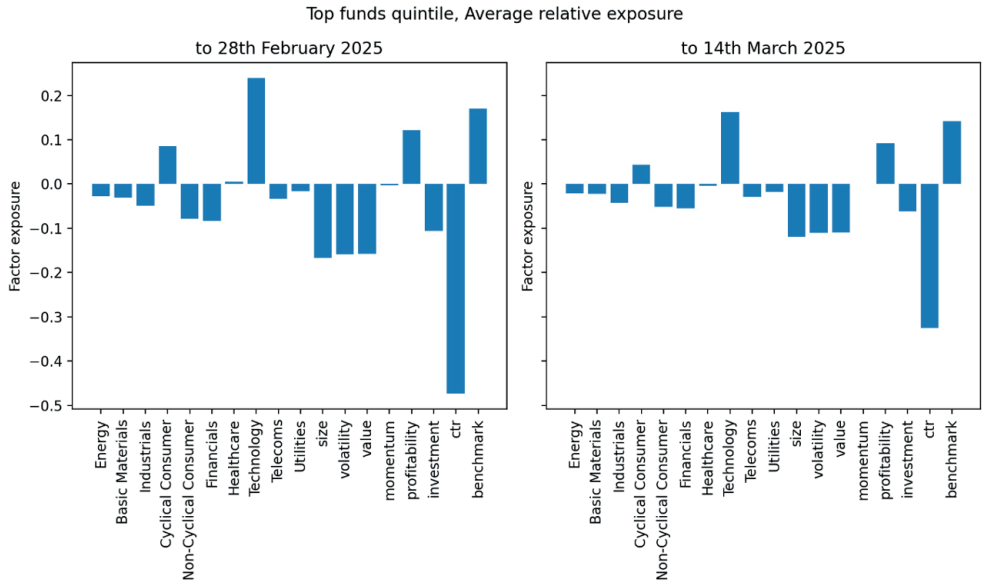


Source: Scientific Portfolio, Morningstar. Top quintile performers out of 157 actively managed equity strategies. Benchmark: SP USA CW Benchmark.

The factor profile of these top quintile strategies is shown in Exhibit 2. If we look first at the *earlier* period (ending 28th February), we can draw a number of conclusions. Top quintile funds at that time were running a high market beta (1.1-1.2), strongly oriented towards growth (long Technology, long Profitability) and away from the Value factor. This is true even of the most highly diversified strategies in the top quintile.

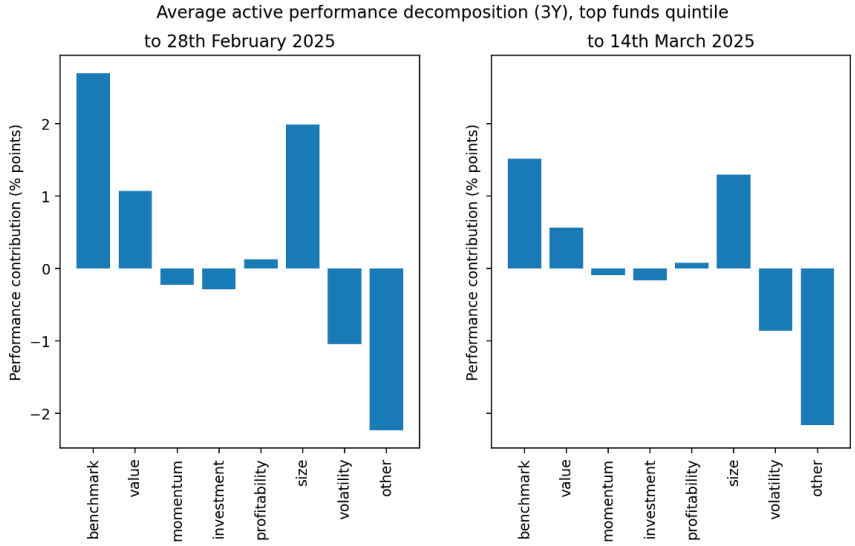
Turning to the right-hand side of Exhibit 2, we see that the overall pattern of 'winners' from a factor perspective has not dramatically changed for the three-year period ending just two weeks later. However, the strength of the relevant tilts—particularly towards technology—has rapidly softened. Return attribution (by factor and sector) is also shown below, in Exhibits 3 and 4.

Exhibit 2: 'Top quintile' funds: sector and risk factor exposures vs. benchmark



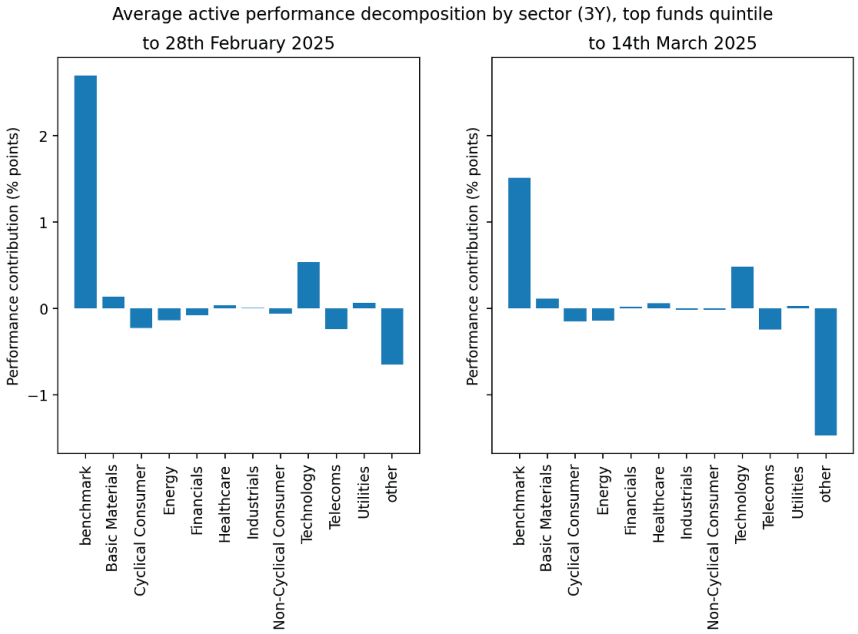
Source: Scientific Portfolio, Morningstar. Top quintile performers out of 157 actively managed equity strategies. Benchmark: SP USA CW Benchmark. For definitions of factors, see Scientific Portfolio Knowledge Center.

Exhibit 3: Factors as drivers of performance? Average active performance decomposition (factors), top quintile funds (three-year)



Source: Scientific Portfolio. Sample: 157 strategies used in Exhibits 1&2. For definitions of factors, see Vaucher (2022); to calculate factor exposures/attributions of a particular strategy/manager, see Scientific Portfolio Platform.

Exhibit 4: Sectors as drivers of performance? Average active performance decomposition (factors), top quintile funds (three-year)



Source: Scientific Portfolio. Sample: 157 strategies used in Exhibits 1&2. To calculate the sector exposures/attributions of a particular strategy/manager, see Scientific Portfolio Platform.

Although there are evident similarities between the two periods in terms of attribution there are also some notable changes. Most obviously, we see a significant decline in market performance contribution. In terms of factor attribution, the pattern may appear broadly similar but figures have significantly decreased with a notable decline in attribution to size and value factors, i.e., the top performance quintile is now less characterized by the outperformance of large cap stocks carrying a high valuation. When looking at sector attribution, we see little change at sector level but a large increase in the negative contribution from the residual/unexplained component. This picture has, of course, continued to change with tariff-related developments (and we will return to it shortly in a further Market Review).

Concentration Risk and 'Extreme' Risk

With the recent focus on the unprecedented degree of equity market concentration at the start of 2025 (as addressed in an earlier Market Review), it is interesting to note the changing profile of the top quintile in this respect, as illustrated in Exhibit 5.

If we look at the earlier period, we find the top quartile dominated by strategies that are relatively concentrated from an asset and sector perspective. This is generally somewhat true in any period of time (for both the top and bottom quintiles), since these will naturally produce higher deviation from benchmark returns. However, and very interestingly, we also find that top-performing funds for the three-year period ending 28th February were *more* diversified than the overall sample from the perspective of Active Risk Diversification (ARD). This supports an argument that it is possible for an investor to run concentrated positions in specific stocks or sectors while still managing factor-based risk concentration that can help them to mitigate extreme losses.

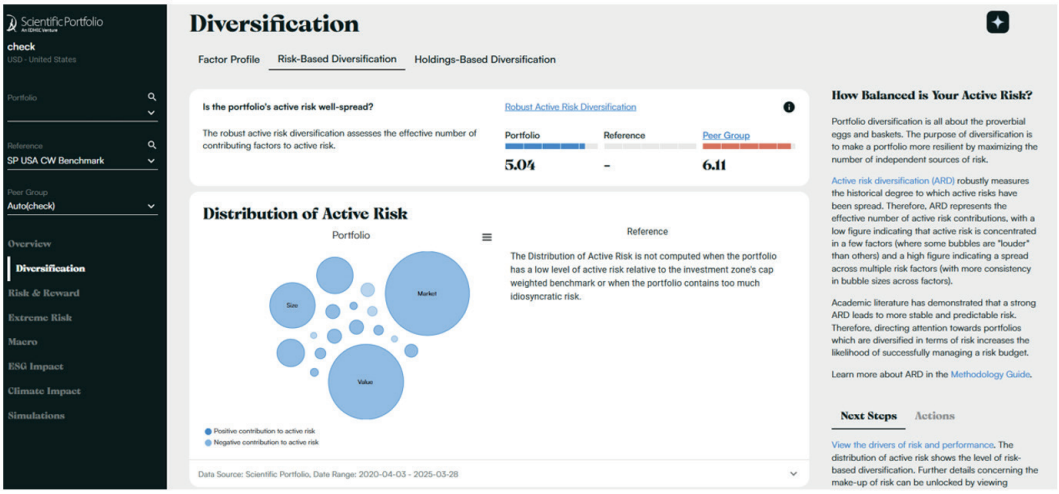
Turning to the three-year period ending just two weeks later, we note some interesting changes in the profile of top quintile funds. The average Effective Number of Stocks (ENS) increased from 23.83 to 29.27, while the Effective Number of Industries/Sectors (ENI) also increased markedly—from 2.44 to 2.98. ARD, on the other hand, decreased.

Exhibit 5: How concentrated are the 'top quintile' funds shown in Exhibit 1?

	At 28 Feb 2025	at 14 Mar 2025
Effective number of stocks (ENS)		
Average ENS, top quintile	**23.83** (Range 14.00 - 57.00)	**29.27** (Range 14.00 - 78.00) ↑
Average ENS, whole sample	40.18	40.57
Effective number of industries/sectors (ENI)		
Average ENI, top quartile	2.44 (Range 1.70 - 4.70)	2.98 (Range 1.90 - 6.80) ↑
Average ENI, whole sample	4.25	4.27
Active risk diversification (ARD)		
Average ARD, top quintile	**5.52** (Range 0.83 – 10.70)	**4.33** (Range 0.41 – 10.61) ↓
Average ARD, whole sample	3.62	2.92

Source: Scientific Portfolio. Sample: 157 strategies. ARD measures the effective number of risk contributions (low figure indicates that active risk is concentrated in few factors).

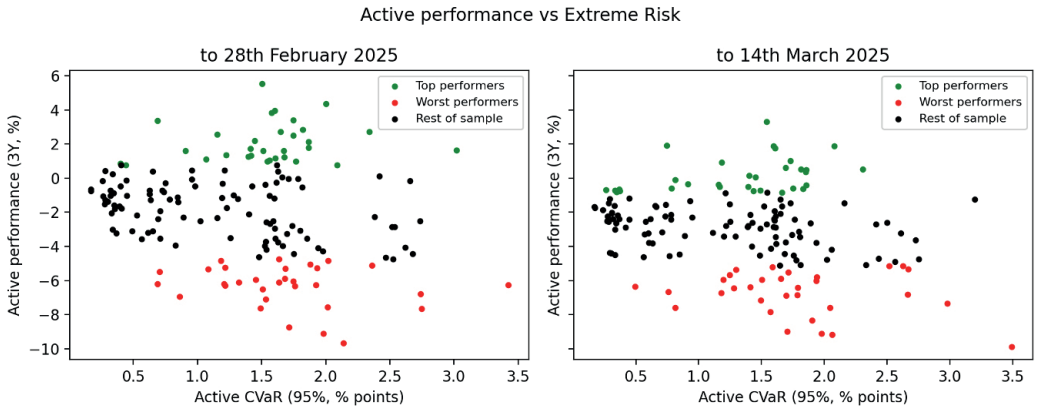
Exhibit 6: Viewing a strategy's 'Active Risk Diversification' (Scientific Portfolio Platform)



Source: Scientific Portfolio Platform (fund is anonymized). Investors can use this tool to examine actively managed funds, ETFs and their own portfolios for ENS, ENI, ARD and more.

Another interesting metric to consider, especially when we have concentration risk at the front of our minds, is what we might term 'extreme' risk — indicated by large CVaR on an absolute or relative basis. Below, Exhibit 7 depicts active performance on a three-year basis versus Active CVaR. The colour coding allows us to see how the 'winners' and 'losers' are scattered within each of the two periods (three years to late-February and three years to mid-March), and the level of relative extreme risk (Active CvaR) they carry.

Exhibit 7: Active performance (three-year, annualized) vs. 'extreme risk' (Active CVaR)



Source: Scientific Portfolio. Sample: 157 strategies examined in Exhibit 1.

We note that, prior to the market decline in early March, 'winners' and 'losers' were on average running fairly similar levels of CvaR. In the later period, however, 'winners' exhibited a lower CVaR than 'losers'[1]. A detailed investigation of funds that moved into and out of the top and bottom performing quintiles[2] shows that funds that transitioned to the new top quintile were running a significantly lower extreme risk compared to those that lost their spot in the top quintile. Conversely, funds that entered the bottom quintile were running a higher CVaR than those who improved their ranking and exited the worst-performing group.

Regime Sensitivity

One subject that must be front of mind amid a period of significant macroeconomic change is the sensitivity of strategies to particular macro 'regimes': the interest rate environment, inflationary conditions, the trajectory of the U.S. dollar, oil price movements and more. It is important for investors to understand not just the factor and sector attribution of a fund manager's performance but the extent to which strong (or weak) returns have come from the realization (or non-realization) of 'regimes' that have been particularly beneficial to that strategy.

Exhibit 8: Top-quintile performers (three-year) and 'regimes'

	Regime annualized returns (3Y to 28 Feb)	Regime annualized returns (3Y to 14 Mar)
Most frequently realized regimes during period		
dollar 'up'	-1.04	-0.63
long-term rates 'up'	0.16	0.45
oil 'down'	-0.77	-0.52
short-term rates 'up'	0.60	0.57
Least frequently realized regimes during period		
size 'up'	-1.48	-0.69
value 'up'	-11.46	-7.78

Source: Scientific Portfolio. Sample: 157 strategies examined in Exhibit 1. For an exploration of Regime Annualized Returns, see Bagnara and Vaucher (2025). Regime Annualized Return designates the estimated average annualized long-term performance experienced by a strategy conditional upon a specific regime occurrence; it may be seen as an alternative to a "what-if" stress test.

1 - The CVaR of 'losers' went from being 1.1x higher (not statistically significant) to 1.34x higher (significant) than that of 'winners'.
2 - Results available upon request.

In order to assess this point, we consider a set of 'macro regimes,' defined to represent periods of strong movement in macroeconomic or factor variables . Importantly, and in order to permit an understanding of regimes' strength, levels are established such that the frequency of each 'regime' represents about a quarter of longer-term history (i.e., top and bottom quartiles). In Exhibit 8, 'most frequent' regimes indicate those that were realized for at least one third of days in the three-year period (i.e. significantly higher than the one-quarter figure), while 'least frequent' regimes are those that cover at most one sixth of the days in the period.

We find meaningful shifts in the 'regime annualized returns' between the earlier and later windows of time, with particularly significant changes for 'dollar up,' 'long-term rates up,' 'size up' and 'value up' regimes; these findings are consistent with the discussion on factor exposures earlier in this article.

Conclusion: Implications for Strategy

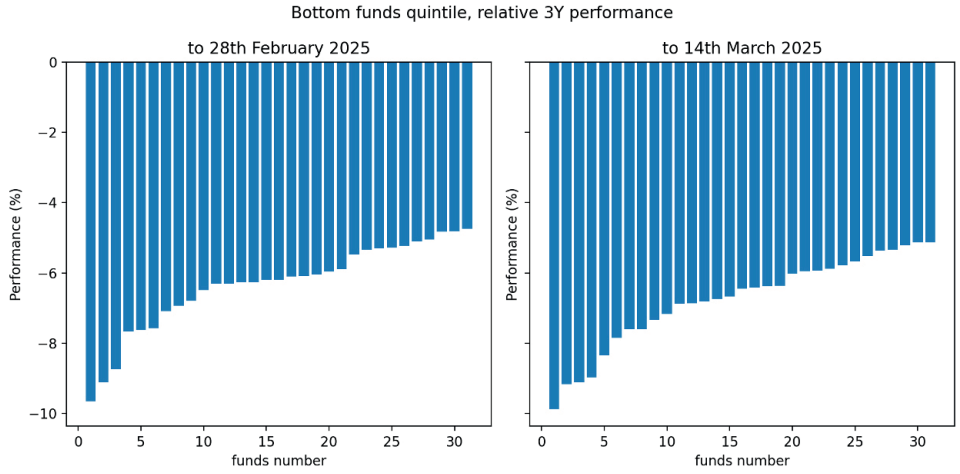
It would be rash to draw firm conclusions too soon about implications for strategy, long-term risk factor exposures, concentration considerations and whether equity portfolios should be adjusted further to improve resilience to different market or macroeconomic regimes. That being said, it is not too soon to frame the questions that should be addressed and the core assumptions that must either be re-validated or changed going forwards.

Data from the Scientific Portfolio platform. Users can access analytics to conduct analyses of available funds and upload their own equity portfolios to examine performance and exposures. Entry-level access is free of charge, via self-registration.

Access the Scientific Portfolio Platform

Appendix

Exhibit 9: 'Bottom quintile' funds: three-year performance (annualized) vs. benchmark



Source: Scientific Portfolio, Morningstar. Bottom quintile performers out of 157 actively managed equity strategies. Benchmark: SP USA CW Benchmark.

3 - See Bagnara and Vaucher (2025)

Exhibit 10: 'Top quintile' funds with highest diversification metrics

Highest Active Risk Diversification		Largest Effective Number of Stocks		Largest Effective Number of Industries	
Fund name	ARD	Fund name	ENS	Fund name	ENS
Goldman Sachs Large Cap Growth Insights Fund	10.61	Federated Hermes MDT Large Cap Value Fund	78	Federated Hermes MDT Large Cap Value Fund	6.8
MassMutual Disciplined Growth Fund	10.10	Federated Hermes MDT All Cap Core Fund	59	BNY Mellon Equity Income Fund	5.3
JPMorgan U.S. GARP Equity Fund	9.75	Allspring Disciplined U.S. Core Fund	47	Voya Growth and Income Portfolio	5.1
Carillon ClariVest Capital Appreciation Fund	9.44	Principal Capital Appreciation Fund	45	Principal Capital Appreciation Fund	4.7
BlackRock Advantage Large Cap Growth Fund	8.88	Eaton Vance Tax Managed Growth 1.1 Fund	40	Federated Hermes MDT All Cap Core Fund	4.3

Source: Scientific Portfolio. Sample: 157 strategies used in Exhibits 1&2. Each list contains the five strategies within in the performance 'top quintile' (three years to 14th March) that have the highest score for each metric shown.

About Scientific Portfolio

Scientific Portfolio is the latest commercial venture incubated within the research ecosystem of EDHEC Business School (EDHEC), one of the world's leading business schools.

Scientific Portfolio has assembled a team with a broad range of expertise and backgrounds, including financial engineering, computer science, sustainable and climate finance, and institutional portfolio and risk management. It proudly carries EDHEC's impactful academic heritage and aspires to provide investors with the technology they need to independently analyse and construct equity portfolios from both a financial and extra-financial perspective.

To achieve this, it offers investors three sources of value through its portfolio analysis & construction platform:

- Helping investors to analyse their equity portfolios, identify actionable insights and enhance portfolios with allocation functionalities. Indeed, Scientific Portfolio likes to promote portfolio analysis as a means to the concrete goal of building portfolios that are both more efficient and better aligned with their investment objectives.
- Providing investors with an integrated framework where financial and extra-financial (ESG) considerations are jointly captured in analysis and portfolio construction. The ability to incorporate ESG-related insights in the portfolio allocation process is now a common requirement among many investors.
- Giving investors access to a Knowledge Centre catering to all types of learners and providing guidance through the portfolio analysis and construction process. This aligns with Scientific Portfolio's commitment to remaining connected with its academic roots and bridging the gap between investors and academia.

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