

# Not All ESG Risks are Equal.

## ESG considerations for active investors



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## Introduction

Environmental, social, and governance (ESG) investing has seen tremendous growth in recent years as investors increasingly consider sustainability issues in their investment decisions. The understanding of the asset pricing and portfolio construction implications of ESG investing has been evolving among academics and practitioners. We model the optimal choice of an investor with non-pecuniary utility from ESG and derive the analytical conditions under which the investor optimally stays passive or active. For an active investor, incorporating ESG considerations can improve or deteriorate the optimal portfolio's expected relative return to the market. When ESG consideration is applied actively to align with the investor's view on relative return, it can enhance the portfolio's expected relative return and the investor's expected utility. Building on this result and utilizing the many facets of ESG, we provide examples of how ESG consideration can be integrated with actively managed portfolios such as factor strategies.

## Literature review

A vast amount of literature has been examining the relationship between ESG and the financial performance of companies, as well as the performance of ESG investing. Meta-studies, such as Whelan et al. (2020), have found more evidence of positive than negative correlation between ESG and corporate financial performance, but indistinguishable ESG investing returns compared to conventional investing. Noteworthy academic literatures advocating for a positive relationship between ESG and company performance include Edmans (2011) and Eccles et al. (2014), while Hong and Kacperczyk (2009) and Barber et al. (2021) document a negative relationship.

The mixed result is not surprising given the discrepancy among different ESG data sources as well as the ways in which ESG investing have been implemented. Another key issue is how investors collectively price ESG information even if it does positively relate to future company performance. Intuitively, investors' demand for good ESG exposure can lower the required return on companies with high ESG scores, but on the other hand, such companies could be more profitable and less sensitive to negative shocks as documented by Giese et al. (2019a). Asset pricing models under which investors derive non-pecuniary utility from holding high ESG score stocks, such as Pastor et al. (2021), suggest that investors with stronger ESG preferences earn lower expected returns. Pedersen et al. (2021) also confirm that investors with non-pecuniary ESG utility achieve lower Sharpe ratio than those without, but whether the expected returns of assets conditional on their ESG scores are higher or lower depends on the composition of investors by their ESG preferences and how informative ESG scores are to future profits.

It is also worth noting that 'ESG' score of a company is usually an aggregate score across different ESG risk metrics. For instance, the MSCI ESG score is a collection of 33 key issue scores along the 3 pillars of Environmental, Social, and Governance.<sup>i</sup> As reported by Giese et al. (2019a), the key issues used in the scoring methodology have a low degree of correlation to each other. Some ESG key issues capture event risks that can affect stock returns over short periods of time while others relate to risks that can have long-term impact. Some key issues simply document past events which are already reflected in the stock's price or well-understood measures of risk such as historical return volatility. Just as how informative a key issue or a pillar is to future profits varies from one to another, investors can also have different degree of awareness towards different key issues and pillars, and hence, different views on ESG.

We extend the literature by revealing that it is the alignment of the investor's active view on returns and ESG that can determine whether the investor stays passive or active, as well as the composition and expected return of an active investor's optimal portfolio. We also provide empirical examples to show that the performance of factor investing with ESG consideration can be improved when the ESG scores are aligned with the investor's relative return expectation.

# Theoretical Framework

Assume that for investor  $i$ , the return of  $N$  risky assets relative to the market for the next period can be written as:  $r = c_i a_i + u$ , where  $a_i$  is the relative return forecast made by investor  $i$ ,  $c_i$  is a coefficient that measures investor  $i$ 's forecasting skill, and  $u \sim N(0, \Sigma)$  is a vector of random variables.

Let  $x_i$  denote the active weight vector chosen by the investor, the expectation and variance of the portfolio's relative return are:  $\mu_i = c_i x_i^T a_i$  and  $\sigma_i^2 = x_i^T \Sigma x_i$ .

The optimal active weight  $\tilde{x}_i^*$  that maximizes expected utility  $\tilde{U}(x_i) = \mu_i - \frac{\lambda}{2} \sigma_i^2$  can be solved as:

$\tilde{x}_i^* = (c_i/\lambda) \Sigma^{-1} a_i$ , where  $\lambda$  is the investor's risk aversion parameter.

Clearly, if the investor has no skill such that  $c_i = 0$ , or no active view on asset returns in the next period such that  $a_i = 0$ , then the investor would choose to stay passive with  $\tilde{x}_i^* = 0$ . Alternatively, for an investor with positive skill such that  $c_i > 0$ , the optimal active portfolio will have overweight in assets where the relative return forecast is positive, vice versa. We assume that the aggregated optimal active weight across all investors in the market is 0, which is consistent with the notion that under simplistic assumptions, active investing is a zero-sum game.

To analyze the impact of incorporating ESG consideration in investing, we assume there is a  $N$ -by- $K$  ESG score matrix  $S$  with each column representing the scores of one of the  $K$  ESG pillars for the  $N$  risky assets.  $S$  is observable by everyone in the market but each investor  $i$  has a unique ESG view  $s_i = S q_i$ , where  $q_i$  is the investor's unique ESG pillar weight vector. This is a reasonable assumption considering some investors care about some pillars of ESG more than others.

Similar to Pastor et al. (2021) and Pedersen et al. (2021), we assume that an investor derives non-pecuniary utility from the ESG scores such that investor  $i$ 's optimal active weight  $x_i^*$  is given by maximizing expected utility in the form of:

$$\max_{x_i} U(x_i) = \mu_i - \frac{\lambda}{2} \sigma_i^2 + \delta_i x_i^T s_i.$$

Here  $x_i^T s_i$  is the portfolio's investor-specific Active ESG score and  $\delta_i$  is the sensitivity of the investor's non-pecuniary utility to it. The solution is:  $x_i^* = (1/\lambda) \Sigma^{-1} (c_i a_i + \delta_i s_i)$ .

Comparing to the optimal active weight without ESG consideration  $\tilde{x}_i^*$ , the investor's optimal portfolio intuitively tilts towards assets with positive investor-specific ESG view if the investor derives positive non-pecuniary utility from high ESG scores ( $\delta_i > 0$ ).

Assume investor  $i$  in the market shares  $m_i$  of the total wealth and the aggregated optimal active weight from all  $M$  investors in the market is again zero such that  $\sum_{i=1}^M m_i x_i = 0$ .

If we denote  $\bar{c}a = \sum_{i=1}^M m_i c_i a_i$  as the market-average relative return view weighted by wealth and skill, and  $\bar{\delta}s = \sum_{i=1}^M m_i \delta_i s_i$  as the market-average ESG view weighted by wealth and sensitivity, then we have the below proposition.

**Proposition 1: For each asset, the market-average view on relative return is the opposite of market-average ESG view.**

$$\bar{c}a = -\bar{\delta}s$$

This proposition is in line with results from Pedersen et al. (2021), in that when the market is dominated by investors chasing high ESG score assets, the expected returns of those assets in equilibrium are reduced proportionally to their ESG scores. Based on the above proposition, we can re-write the investor's optimal active weight as:  $x_i^* = (1/\lambda) \Sigma^{-1} [(c_i a_i - \bar{c}a) + (\delta_i s_i - \bar{\delta}s)]$ . This means that for a passive investor characterized by  $x_i^* = 0$ , the following corollary must hold.

**Corollary 1: An investor stays passive if the investor's relative return expectation is the exact opposite of the investor's utility from ESG, i.e.  $c_i a_i = -\delta_i s_i$ . There are two special cases:**

1. **The investor has the market-average view on both relative return and ESG, i.e.  $c_i a_i = \bar{c}a$  and  $\delta_i s_i = \bar{\delta}s$ .**
2. **The investor has no skill or no view on relative return, i.e.  $c_i a_i = 0$ , and also doesn't care about ESG, i.e.  $\delta_i = 0$ .**

The introduction of ESG consideration leaves the investor's decision to stay passive or active resting on how the investor's relative return forecast aligns with the investor's ESG view. An investor who has skill to make a forecast on relative return that differs from the market-average could still stay passive if the forecast is driven entirely by the simple belief of 'high ESG score assets earn lower expected return'. The alignment between the investor's relative return forecast and ESG view, i.e. the sign of  $a_i^T \Sigma^{-1} s_i$ , plays a pivotal role in determining the expected outcomes of the optimal portfolio, as shown in the below proposition and its corollary.

**Proposition 2: The optimal portfolio has the following properties:**

**Expected relative return**  $\mu_i^* = (c_i^2/\lambda) a_i^T \Sigma^{-1} a_i + (c_i \delta_i / \lambda) a_i^T \Sigma^{-1} s_i$

**Non-pecuniary ESG utility**  $\delta_i \widehat{x}_i^{*T} s_i = (\delta_i^2 / \lambda) s_i^T \Sigma^{-1} s_i + (c_i \delta_i / \lambda) a_i^T \Sigma^{-1} s_i$

**Expected utility**  $U^* = (c_i^2 / 2\lambda) a_i^T \Sigma^{-1} a_i + (\delta_i^2 / 2\lambda) s_i^T \Sigma^{-1} s_i + (c_i \delta_i / \lambda) a_i^T \Sigma^{-1} s_i$

We can verify that a passive investor expects zero relative return and zero utility from the optimal portfolio. As for an active investor who has positive skill ( $c_i > 0$ ) and targets high ESG score assets ( $\delta_i > 0$ ), positively aligned ESG and relative return view ( $a_i^T \Sigma^{-1} s_i > 0$ ) is a sufficient, but not necessary, condition for the above properties of the optimal portfolio to be positive.

Since the active weight and expected relative return of the optimal portfolio without ESG consideration are  $\widehat{x}_i^* = (c_i / \lambda) \Sigma^{-1} a_i$  and  $\widehat{\mu}_i^* = (c_i^2 / \lambda) a_i^T \Sigma^{-1} a_i$ , we can re-write the expected relative return of the optimal portfolio with ESG consideration as:

$$\mu_i^* = \widehat{\mu}_i^* + \delta_i \widehat{x}_i^{*T} s_i$$

If the investor targets high ESG scores ( $\delta_i > 0$ ), then whether having ESG consideration improves relative return expectation at the portfolio level depends entirely on the sign of  $\widehat{x}_i^{*T} s_i$ . This gives us the following corollary.

**Corollary 2: An active investor who likes high ESG score assets is expected to earn higher relative return if the investor's ESG scores align positively with the investor's original optimal active weights without ESG consideration.**

For example, if the overweight positions in the investor's original optimal portfolio have positive investor-specific ESG scores, then the investor-specific ESG consideration induces the investor to increase the overweight and as a result improves expected relative return of the portfolio. On the other hand, if all of the assets the investor originally wants to hold as overweight have negative ESG scores, then investor has to hold less of them in order to improve the non-pecuniary utility. In an extreme case, the investor has to reduce the original overweight positions so much that they are now neutral positions and the investor becomes passive.

If the investor derives relative return forecast  $a_i$  independently from ESG considerations but takes ESG views passively from index providers, then the investor has no control over the alignment between the ESG score and the original optimal active weight. Instead, by customizing ESG pillar weight  $q_i$  on a common ESG score matrix  $S$ , an investor can still form a unique ESG view  $s_i = S q_i$  such that  $s_i$  is aligned with the original optimal active weight. We illustrate this idea with empirical analysis in the next section.

## Empirical Analysis

Investors nowadays are equipped with an abundance of ESG data, which forms the basis of stock-level ESG scores that can be calculated as a weighted average of scores covering different dimensions of ESG risks. For example, the MSCI Industry-adjusted ESG score (hereafter "Standard ESG score"), which ranges from 0 to 10, is an industry-adjusted weighted-average score received from 33 risk issues along the three ESG pillars of Environmental, Social and Governance. It is unrealistic to assume that such a ready-made one-size-fits-all ESG metric would align positively with every active investor's relative return expectation at all times.

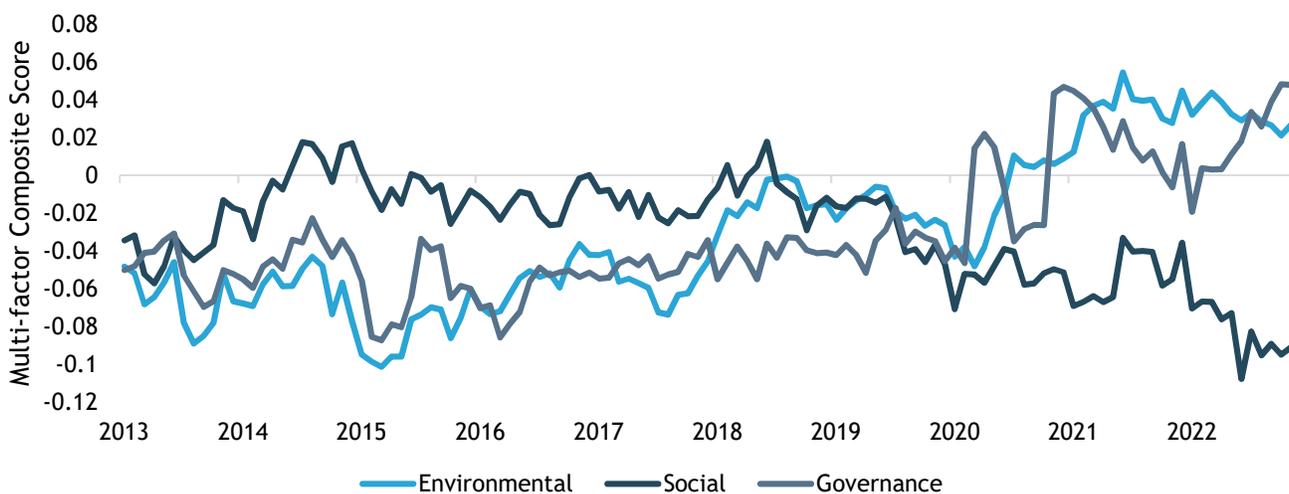
Here, a typical case of positive alignment is when low ESG score stocks that have high ESG risk also have low relative return expectation. Just like credit investors demand credit spread for taking on default risk, positive alignment would make an active equity investor more likely to hold stocks with higher ESG scores since taking higher ESG risk in low ESG score stocks is not being compensated by the market.

For example<sup>ii</sup>, Zoom Video Communications (hereafter Zoom) had a relatively low Environmental pillar score of 4.6 in December 2020. With a large proportion of the global workforce working from home during the pandemic, the rapid rise in price of the company during 2020 has left the company with a hefty valuation and a forward 3-year earnings yield of merely 1%, which usually indicates low relative returns in the future. In contrast, Exxon Mobil Corporation (hereafter Exxon Mobil) had the same Environmental pillar score but a much lower valuation. After a year of sell-off amid growing concerns of the economy and the trend of moving into cleaner energy, Exxon Mobil's forward 3-year earnings yield is around 8%. From a pure ESG perspective, it seems that Exxon Mobil's Environmental pillar risk was being compensated much more than Zoom's, even though the huge difference between their subsequent 3-year cumulative return, namely 143% for Exxon Mobil and -78% for Zoom, were most likely driven by valuation, sector and stock specific reasons. If most low Environmental pillar stocks had low relative return expectation like Zoom, the pillar's ESG risk is not worth taking. On the other hand, if Exxon Mobil is more representative of low Environmental pillar score stocks, then staying away from them could hurt performance.

To mitigate potential misalignment between ready-made ESG scores and relative return expectation, we can build active ESG scores by tilting towards ESG pillars that have positive alignment with an investor’s relative return expectation. We implement this idea empirically on a universe of around 7,500 stocks in the global equity markets including both developed and emerging countries between January 2013 and December 2022. Roughly 80% of the stocks in the universe have Standard ESG scores since January 2013<sup>iii</sup>, following major update of the Standard ESG score model in the previous year which improved data coverage. To proxy for an active portfolio, we focus on strategies that invest in stocks with high multi-factor composite scores, where we equally weight factor scores that represent exposures to well-documented market anomalies, namely value, momentum and quality.<sup>iv</sup> Irrespective whether we subscribe to behavioral or risk-based school of thought explaining these anomalies, the multi-factor composite scores represent an investor’s relative return expectation going forward.

We first rank stocks in the universe by their standard Environmental, Social, and Governance pillar scores individually and define those ranked in the bottom one-third as ‘poor ESG stocks’ according to each pillar. The below exhibit plots the average multi-factor composite scores of these poor ESG stocks over time. Having negative multi-factor composite score means that holding the stock is unlikely to be compensated by positive relative return, which has been the case for the Environmental pillar before 2020. But since then, the positive multi-factor composite score of the poor Environmental stocks indicates that the pillar risk could be worth taking. At the end of 2020, continuing to avoid poor Environmental stocks could have resulted in an investor missing out on both Zoom and Exxon Mobil. But if the investor’s active ESG view is tilted towards the Social pillar whose poor ESG stocks had negative multi-factor composite score, the investor would be more likely to have avoided Zoom, which had a low Social pillar score of 3.3, but not necessarily Exxon Mobil, whose Social pillar score is more benign at 5.8.

**Exhibit 1: Multi-factor composite score of poor ESG stocks**

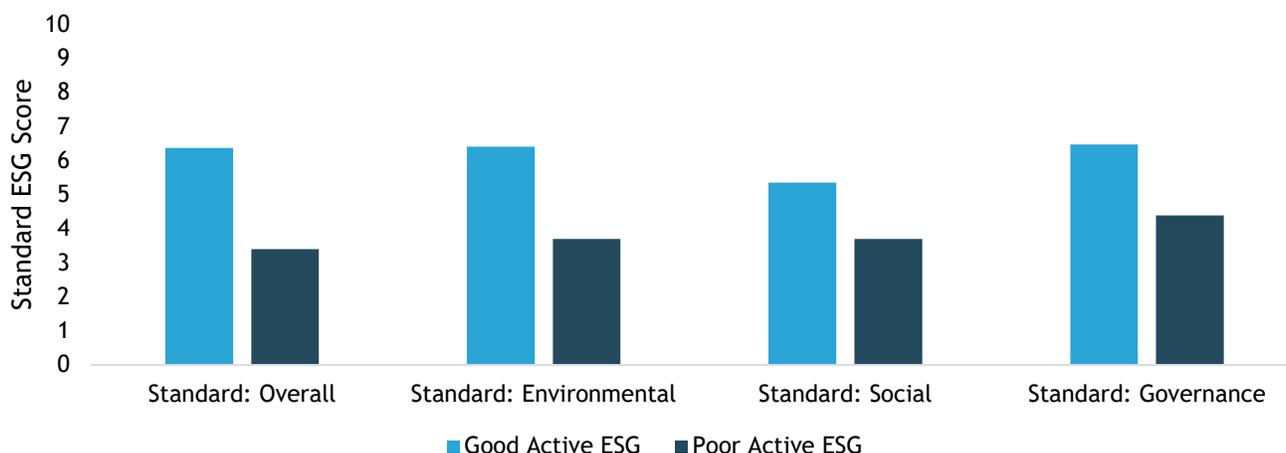


Source: SEI, MSCI, FactSet. Universe: global equities including both developed and emerging countries, Jan 2013 - Dec 2022. Poor ESG stocks are defined as stocks ranked in the bottom 1/3 of the universe by their respective MSCI ESG pillar scores. Multi-factor composite score is an equal-weighted score of normalized value, momentum, and quality.

In the below examples we formalize the idea of tilting active ESG view towards pillars that are more aligned with relative return expectation with the construction of an Active ESG score by conditionally weighting ESG pillar scores. We assign more weights to a pillar if low pillar score stocks have negative multi-factor composite scores. Each month, the initial weight of a pillar is the bigger value between zero and the opposite of the average multi-factor composite score of stocks in the bottom one-third of the universe by their pillar scores. We then scale the initial weights such that the final weights of all three pillars always sum up to one. In the case where all three pillars’ poor ESG stocks have positive multi-factor scores, we equal-weight the pillars. Effectively, we assign higher weights to the pillar whose poor ESG stocks are less likely to be compensated with positive relative return going forward. The Active ESG score is therefore more aligned with relative return expectation by design.

On average, the Active ESG score is still consistent with the Standard ESG score and each of its 3 pillars in differentiating between good and poor ESG stocks, which are defined as stocks in the top and bottom one-thirds of the universe according to a particular ESG score. The Standard ESG scores range between 0 and 10 with an average around 5. We can see that good Active ESG stocks have above-average Standard ESG scores while those of the poor Active ESG stocks are below average.

**Exhibit 2: Standard ESG scores of good and poor Active ESG stocks**



Source: SEI, MSCI, FactSet. Universe: global equities including both developed and emerging countries, Jan 2013 - Dec 2022. Good and poor ESG stocks are defined as stocks ranked in the top and bottom 1/3 of the universe by their respective ESG scores. Standard ESG refers to MSCI industry-adjusted ESG scores and the scores of its 3 pillars. Active ESG scores are calculated as the weighted-average of Environmental, Social, and Governance pillar scores, with the customized weights proportional to the bigger value between 0 and the opposite of the multi-factor composite score of the bottom 1/3 of each pillar. Multi-factor composite score is an equal-weighted score of normalized value, momentum, and quality.

The Active ESG scores have been constructed such that stocks with low ESG scores are less likely to be compensated with high relative returns. This means that investors targeting high Active ESG scores should benefit economically from buying good Active ESG stocks and selling poor Active ESG stocks over time. Such a strategy generated a statistically significant annualized return of 2.86%. In comparison, a strategy that buys good Standard ESG and sells poor Standard ESG stocks earned lower return which is also not statistically significant. Since the Active ESG score dynamically assigns higher weights to ESG pillars where the ESG risks are not priced in by the multi-factor composite score, we expect the difference between the return of the two strategies above to be driven by the underperformance of low Active ESG score stocks. This can be seen from the breakdown below where poor Active ESG stocks significantly underperformed the average return of stocks in the market.

**Table 1: The performance of good and poor ESG stocks**

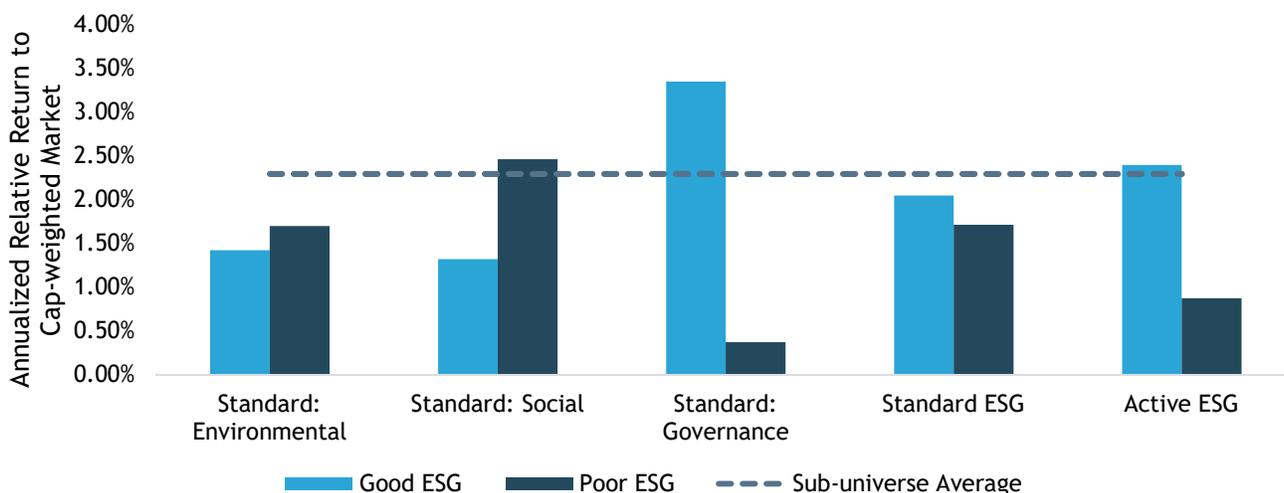
		Standard ESG	Active ESG
Good ESG minus Poor ESG	Annualized Return	1.67%	2.86%
	T-stat	1.20	2.02
Good ESG minus Market Average	Annualized Return	1.00%	1.39%
	T-stat	1.11	1.62
Poor ESG minus Market Average	Annualized Return	-0.67%	-1.47%
	T-stat	-0.88	-1.76

Source: SEI, MSCI, FactSet. Universe: global equities including both developed and emerging countries, Jan 2013 - Dec 2022. Good and poor ESG stocks are defined as stocks ranked in the top and bottom 1/3 of the universe by their respective ESG scores. Standard ESG refers to MSCI industry-adjusted ESG scores. Active ESG scores are calculated as the weighted-average of Environmental, Social, and Governance pillar scores, with the customized weights proportional to the bigger value between 0 and the opposite of the multi-factor composite score of the bottom 1/3 of each pillar. Multi-factor composite score is an equal-weighted score of normalized value, momentum, and quality. Returns of good and poor ESG stocks are equal-weighted and rebalanced monthly. Past performance does not guarantee future performance.

Next, we show that integrating ESG consideration using Active ESG scores improves the performance of active strategies that hold stocks in the high multi-factor composite score sub-universe, which is defined as the top one-third of the full universe by stocks' multi-factor composite scores. An investor holding all stocks within this sub-universe equally, regardless of ESG scores would have outperformed the cap-weighted benchmark consisting of all stocks in the full universe by 2.29% annually, as shown by the dotted line representing the sub-universe average relative return in Exhibit 3. Good and poor ESG stocks within the sub-universe had varying degrees of success, depending on the ESG score used. Those with good Standard Environmental or Social pillar scores not only underperformed their poor ESG counterparts, but also underperformed the sub-universe average. Despite the outperformance of good Governance stocks within this universe, those with good Standard ESG scores, which are passively-weighted pillar scores, still underperformed the sub-universe average. In other words, asking an active investor who buys stocks with good relative return expectation to tilt towards stocks with good Standard ESG scores would have hurt performance. In contrast, good Active ESG stocks performed on par with the sub-universe average, to which the poor Active ESG stocks underperformed by 1.42% annually.

Since the ESG score of a portfolio is the weighted-average of the ESG scores of its holdings, improving the portfolio's ESG score means that on average, weights need to be tilted towards stocks with high ESG scores and away from stocks with low ESG scores. Regardless of the portfolio construction methodology employed to carry out this task, if poor ESG holdings underperform an average holding, then the investor can benefit from improving the portfolio's ESG score. For investors holding stocks in the high multi-factor composite score sub-universe, the underperformance of poor Active ESG stocks to the sub-universe average is statistically significant, while that of poor Standard ESG stocks is not. Similar to the results in the full universe, a strategy that buys good Active ESG and sells poor ESG stocks within the high multi-factor composite score sub-universe would have returned 1.52% annually, while a similar strategy using the Standard ESG score would only generate 0.33%.

**Exhibit 3: Annualized relative return of good and poor ESG stocks in the high multi-factor composite score sub-universe**



Source: SEI, MSCI, FactSet. Universe: global equities including both developed and emerging countries, Jan 2013 - Dec 2022. Good and poor ESG stocks are defined as stocks ranked in the top and bottom 1/3 of the universe by their respective ESG scores. Standard ESG refers to MSCI industry-adjusted ESG scores and the scores of its 3 pillars. Active ESG scores are calculated as the weighted-average of Environmental, Social, and Governance pillar scores, with the customized weights proportional to the bigger value between 0 and the opposite of the multi-factor composite score of the bottom 1/3 of each pillar. Multi-factor composite score is an equal-weighted score of normalized value, momentum, and quality. Portfolios holding all stocks within the sub-universe, good or poor ESG stocks within the sub-universe are equal-weighted and rebalanced monthly. Relative returns are calculated monthly against cap-weighted market benchmark. Past performance does not guarantee future performance.

The above results are not surprising. Guided by theory, we constructed the Active ESG scores to be more aligned with relative return expectation, which is represented by the multi-factor composite scores. In both the full universe and the high multi-factor composite score sub-universe, buying good Active ESG and selling poor Active ESG stocks had higher correlation with the multi-factor composite returns than doing so using the Standard ESG scores. We calculate multi-factor composite return as the difference between the average returns of the top and bottom one-thirds of the full universe by multi-factor composite scores. In the full universe, the strategy using Active ESG scores has a correlation of 0.44 with the multi-factor composite return, while the one using Standard ESG score only has a correlation of 0.26. The same pattern is true within the high multi-factor composite score sub-universe, despite the fact that all stocks are expected to be positively correlated with the multi-factor composite return.

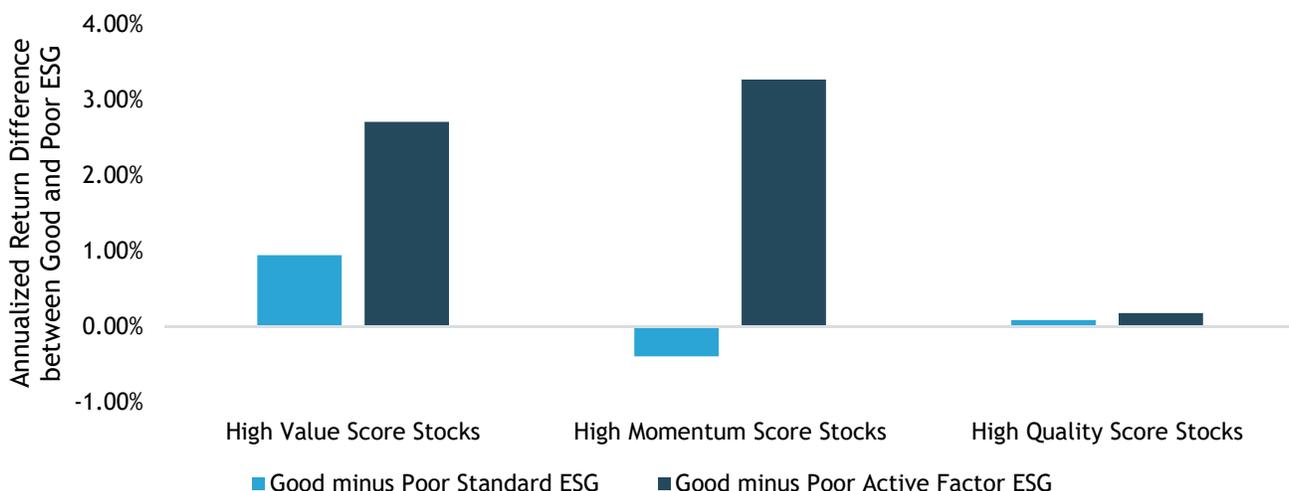
**Table 2: Correlation between multi-factor composite return and the return of buying good ESG and selling poor ESG stocks**

	Standard ESG	Active ESG
Full Universe	0.26	0.44
High Multi-factor Composite Score Sub-universe	0.02	0.09

Source: SEI, MSCI, FactSet. Universe: global equities including both developed and emerging countries, Jan 2013 - Dec 2022. Good and poor ESG stocks are defined as stocks ranked in the top and bottom 1/3 of the universe by their respective ESG scores. Standard ESG refers to MSCI industry-adjusted ESG scores and the scores of its 3 pillars. Active ESG scores are calculated as the weighted-average of Environmental, Social, and Governance pillar scores, with the customized weights proportional to the bigger value between 0 and the opposite of the multi-factor composite score of the bottom 1/3 of each pillar. Multi-factor composite score is an equal-weighted score of normalized value, momentum, and quality. Multi-factor composite return is calculated as the difference between the average returns of the top and bottom one-thirds of the full universe by the stocks' multi-factor composite scores. The returns of buying good ESG and selling poor ESG stocks are calculated as the difference between the average returns of the top and bottom one-thirds of the respective universe by the stocks' respective ESG scores. Correlations are estimated over the entire sample period. Past performance does not guarantee future performance.

So far we have been using the multi-factor composite score as a proxy for relative return expectation to show that active investors looking to improve both the performance and ESG score of the portfolio benefit from using the Active ESG score. In the below, Exhibit 4, we show that the benefits of actively weighting ESG scores also apply to other relative return expectation proxies. For each individual factor of value, momentum and quality, we construct Active Factor ESG scores following the same methodology as the Active ESG score, replacing the multi-factor composite score with the individual factor score. Each set of Active Factor ESG score is more aligned with the corresponding relative return expectation represented by the individual factor than the Standard ESG score is. For value and momentum portfolios that hold high value score stocks and high momentum score stocks, improving portfolio-level ESG score through buying good and selling poor Active Factor ESG stocks generated significant returns while doing so using the Standard ESG score did not.

**Exhibit 4: Annualized return of buying good ESG and selling poor ESG stocks in high factor score sub-universes**



Source: SEI, MSCI, FactSet. Universe: global equities including both developed and emerging countries, Jan 2013 - Dec 2022. Good and poor ESG stocks are defined as stocks ranked in the top and bottom 1/3 of the universe by their respective ESG scores. Standard ESG refers to MSCI industry-adjusted ESG scores and the scores of its 3 pillars. Active Factor ESG scores are calculated as the weighted-average of Environmental, Social, and Governance pillar scores, with the customized weights proportional to the bigger value between 0 and the opposite of the individual factor score of the bottom 1/3 of each pillar. The returns of buying good ESG and selling poor ESG stocks within each high factor score sub-universe are calculated as the difference between the average returns of good and poor ESG stocks within the sub-universe. Past performance does not guarantee future performance.

# Conclusion

In light of the on-going debate of whether pursuing ESG investing comes at the cost of performance, we offer a unique view showing that in order for active investors to improve performance while achieving good ESG status, they need to actively align ESG view with relative return expectation.

Having demonstrated that it is the alignment between an investor's relative return expectation and ESG view that determines the investor's decision to stay passive or active, we went on to show both theoretically and empirically that an active investor can improve performance by positively aligning return expectation and ESG views. For long-only active portfolios investing in stocks with high exposures to factors that exploit market anomalies (or price risks), implementing ESG consideration using a set of actively calculated ESG scores that weight each of the Environmental, Social and Governance pillar conditional on how they align with factor scores delivers better performance than simply using the standard MSCI Industry-adjusted ESG scores. Effectively, since not all ESG risks are priced in by the market in the same way, an active investor should actively pursue good portfolio-level ESG score through penalizing ESG risks that are not sufficiently compensated with high relative return expectation.

While our findings highlight the importance of aligning active ESG view with relative return expectation, we have by no means exhausted our search for methods of actively integrating ESG consideration into factor strategies, let alone other types of active portfolios. We also remain curious to understand how the relationships revealed in this paper hold over longer periods of time should ESG data history expands. Just as the performance of factors like value, momentum, and quality could vary over time due to changes in economic cycles and investor behaviour, whether the growing adoption of ESG investing leads to changes in factor performance remains to be investigated.

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<sup>1</sup> MSCI ESG score methodology (MSCI 2023):

**"Industry-Adjusted Company Score:** This score is calculated by normalizing the Weighted Average Key Issue Score relative to the ESG Rating industry peer group, based on score ranges set by the benchmark values in the peer set.

**Weighted Average Key Issue Score (WAKIS):** This is calculated for each company based on the weighted average of the scores received on:

- All the individual Environmental and Social Key Issues contributing to the rating of the company; and
- The Governance Pillar Score.

The Governance Pillar Score is an absolute assessment of a company's overall governance that uses a universally applied 0-10 scale. Starting with a 10, the Governance Pillar Score is based on the sum of deductions derived from Key Metrics included in the Corporate Governance (comprising Ownership & Control, Board, Pay and Accounting) and Corporate Behavior (comprising Business Ethics and Tax Transparency) Themes.

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Key Issue Scores (Environmental and Social Themes): Each company receives a score on each selected Key Issue ranging from 0 to 10. In the Environmental and Social Pillars, the scores evaluate the company’s exposure to risks or opportunities and its ability to manage that exposure. These are calculated using the Key Issue Exposure Score and Key Issue Management Score.”

<sup>ii</sup> ESG scores data on Zoom and ExxonMobil hereafter are from MSCI. Earnings and performance data on Zoom and ExxonMobil hereafter are from FactSet.

<sup>iii</sup> Source: SEI, based on MSCI data

<sup>iv</sup> Rewarded factor scores are normalized scores that proxy each stock’s sensitivity to Value, Momentum and Quality, which are well-documented market anomalies as summarized in Barbaneagra and Shang (2023).

To proxy Value, we rank stocks outside of banking sector on equally weighted composite of the following ratios: shareholder yield (consisting of dividend yield, equity share repurchase yield, and debt repayment yield), median 10-year historical earnings-to-market ratio, last 12-month EBITDA-to-enterprise value, tangible book-to-market value, last 12-month sales-to-market value, last 12-month operating cash flow-to-market value, last 12 month earnings-to-market value, forecasted next 12-month earnings-to-market value, forecasted following 12-month earnings-to-market value, 5 year historical share price total return (reversal). For banks, we employ an equally weighted composite of Shareholder Yield (consisting of dividend yield, buy-back yield, and debt repayment yield), median 10-year historical earnings-to-market, last 12-month earnings-to-market, and forecasted next 12-month earnings-to-market and forecasted following 12-month earnings-to-market; we rank banks separately on shareholder yield, median 15-year historical earnings-to-market, forecasted next 12-month earnings-to-market, and last 12-month earnings-to-market value.

To proxy Momentum, we rank stocks on equally weighted composite of month t-1 to t-12 price momentum, standardized unexpected earnings (measured as earnings surprise vs median estimate prior to earnings release), and forecasted earnings upgrade to downgrade diffusion ratio.

To proxy Quality, we rank stocks outside of banking sector on equally weighted composite of gross profitability to assets, interest rate coverage, gross margin, free cash flow to assets, return on invested capital (both latest 12 months and normalized on 15-year historical average return), sales to assets, accruals (cash flow method), capex-to-depreciation, and net cash position to assets; we rank bank separately on return on invested capital (both latest 12 months and normalized on 15-year historical average return), Texas ratio, and 12-month change in non-performing loans.