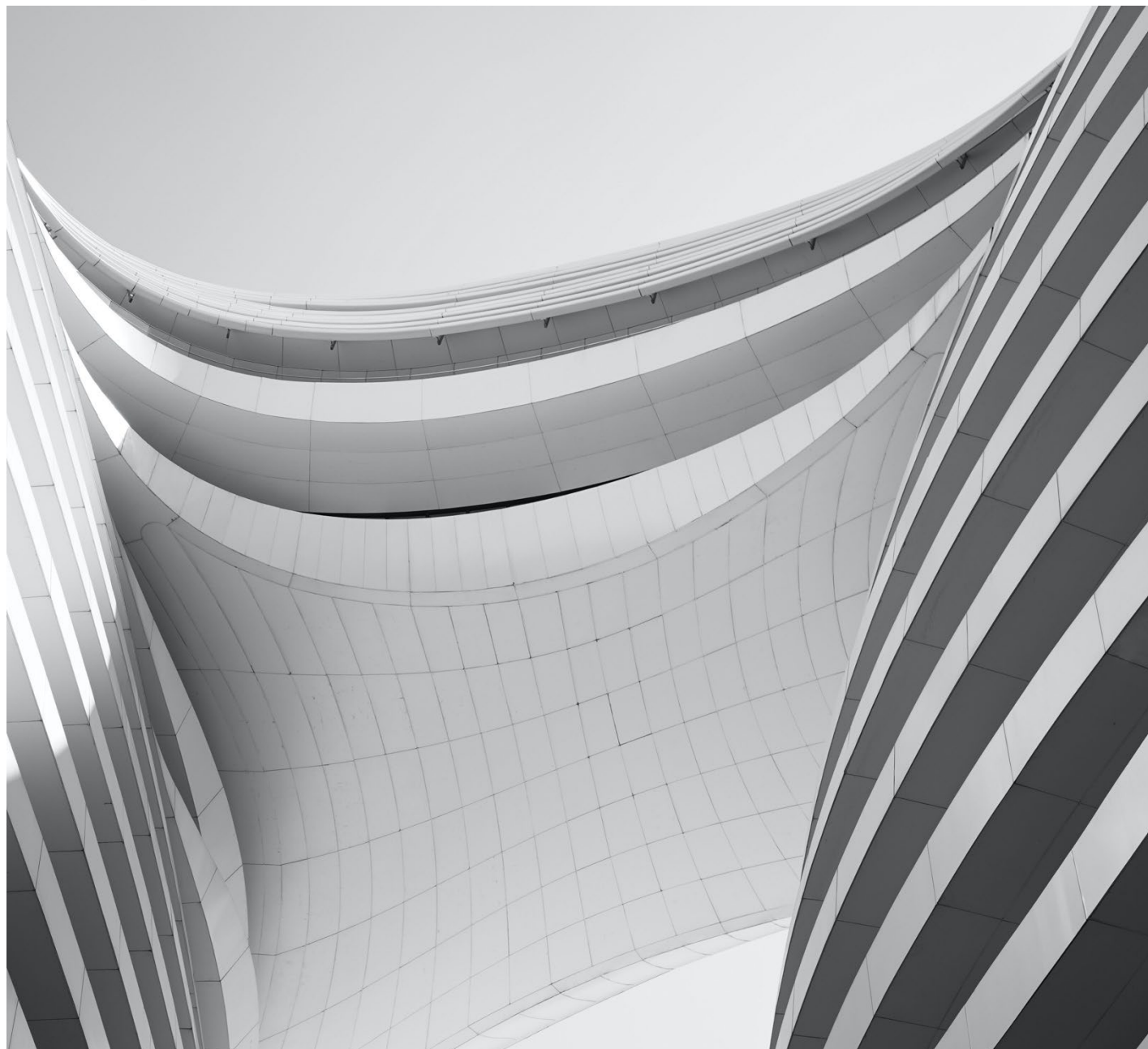


# ESG Improvers: An Alpha Enhancing Factor



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## Key Takeaways

- We believe that investors will increasingly differentiate between ESG Leaders and Improvers - firms showing the greatest improvement in their ESG footprint - and that the latter offers a greater potential for generating uncorrelated alpha over the long-term.
- Our research led to the creation of the **Rockefeller ESG Improvers Score™ (REIS)**, a score that ranks a company's improvement in performance on material ESG issues relative to industry peers. At Rockefeller Asset Management, we have long-used materiality and ESG Improvers concepts alongside our fundamental research process. The REIS has the potential to supplement our actively managed research and contribute to idea generation.
- A backtested, hypothetical portfolio of top quintile ESG Improvers outperformed bottom quintile ESG "Decliners" by 3.8% annualized in an analysis covering US all cap equities from 2010 - 2020. The signal is monotonic, in that outperformance grew with each quintile.
- An Optimized hypothetical ESG Improvers Portfolio, which seeks to isolate pure ESG Improvement while controlling for sector and factor biases, generated 0.5% annualized excess returns from 2010 - 2020 with 1.3% tracking error relative to the Bloomberg US 3000 Index.
- The ESG Improvers factor created from the REIS enhanced returns when integrated with traditional factors over our backtest period. A hypothetical multi-factor ESG Improvers + Quality + and Low Vol Portfolio outperformed a two-factor quality and low volatility portfolio by 0.45% annualized for the period 2010 - 2020. Over the same time period, an ESG Improvers + Value + Momentum Portfolio outperformed a two-factor value and momentum portfolio by 1.1% annualized.
- We believe that Rockefeller's ESG Improvers research has wide reaching applications across (1) long-only fundamental, (2) long-short fundamental, and (3) quantitative styles of investing. In addition to supplementing our bottom-up research and idea generation process, we are exploring a suite of systematic strategies that blend the REIS with traditional investment factors such as value, quality, size, momentum and low volatility.

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An early critique of ESG practices was provided by Milton Friedman, who argued in his 1976 article “The Social Responsibility of Business is to Increase Profits” that the primary role of companies was to maximize profits, and that engaging in sustainability practices would reduce returns to shareholders<sup>[1]</sup>. Similar views were shared more recently by McWilliams and Seigel,<sup>[2]</sup> and Halbritter and Dorfleitner<sup>[3]</sup> in 2015 through a more quantitative approach.

With the advent of greater ESG data disclosure, increased popularity of unified reporting frameworks such as the Sustainability Accounting Standards Board (“SASB”), and a growing number of studies measuring the ESG performance of a firm<sup>[4][5]</sup>, investors are better able to quantify the risk-return ramifications of ESG integration.

A seminal study carried out by Khan et. al.<sup>[5]</sup> distinguished between material (i.e. investments that impact the financial performance of a company) and immaterial sustainability investments. Using calendar-time portfolio return regressions, they concluded that firms with superior performance on changes in material issues such as human capital management, air quality, and board governance outperformed firms with poor performance on material issues. Their backtested results generated statistically significant alpha after running regressions against the traditional Fama-French 3 and 5 factor models. Their results therefore confirmed that the trajectory of a firm’s ESG footprint contributes to strong financial performance. Nagy et. al.<sup>[6]</sup> quantitatively studied two strategies – “ESG tilt” and “ESG momentum” – and found that both strategies outperformed the global benchmark over an 8-year period, with a significant part of their performance not explained by other risk factors. Sherwood and Pollard<sup>[7]</sup> focused their efforts on emerging market indices and concluded that integrating best-in-class ESG performers into emerging market equity portfolios could enhance returns and lower downside risk, when compared to non-ESG equity investments.

Investable ESG indices have performed favorably both during acute market drawdowns and over longer time periods. During the first quarter 2020 COVID crisis drawdown, 24 of 26 ESG index funds outperformed their conventional index benchmarks across US, non-US developed markets, and emerging markets, [according to Morningstar](#). While there are small differences in sector allocations, the attribution analysis showed that outperformance of sustainable index funds was driven by security selection. For example, the stock selection effect contributed on average 0.45%, 1.44%, and 1.05% of outperformance for US, non-US developed market and emerging market sustainable indices, respectively. Over longer time periods certain developed and emerging market ESG indices that deploy basic positive tilting methodologies outperformed their traditional, non-ESG counterparts with minimal tracking error. For example, [MSCI’s World ESG Focus Index](#), a developed market benchmark, [MSCI’s Emerging Market ESG Focus Index](#), and [S&P’s 500 ESG Index](#) outperformed their non-ESG counterparts by 0.7% to 1.4% annualized over the past 5 years with similar levels of risk as measured by standard deviation.<sup>1</sup>

We will define the landscape and add to the body of evidence through our proprietary research demonstrating the risk and return benefits of ESG Improvers, an approach that isolates the trajectory of a firm’s ESG profile relative to industry peers. At Rockefeller Asset Management (RAM), we believe that investors will increasingly differentiate between ESG Improvers and Leaders, and that the former offers greater potential for generating uncorrelated alpha over the long-term.

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<sup>1</sup> Risk and return statistics are disclosed publicly on index factsheets by each index provider. S&P 500 ESG Index data is as of 7/31/2020 and MSCI’s Index data is as of 6/30/2020.

## Defining the Landscape: Four Sustainable Investing Pillars

Investment managers have followed varied styles of sustainable investing depending on the end investors' goals. Sustainable Investing is the umbrella term used to reference four pillars:

1. **Socially Responsible Investing**, pioneered by faith-based investors, is excluding business activities deemed objectionable. The primary objective is to implement negative screens based on the investors' values.
2. **Mission-Driven Impact**, led by non-profits such as the Rockefeller Foundation, is investing to generate positive environmental or social impact. The primary objective is positive impact.
3. **Thematic** strategies invest alongside themes such as climate change, ocean health, or diversity with the goal of generating alpha.
4. **ESG Integration** is incorporating ESG information to enhance the investment process. The primary investment objective is to generate alpha.

### Four Sustainable Investing Pillars

	Socially Responsible Investing	Mission-Driven Impact	Thematic	ESG Integration
PRIMARY OBJECTIVE	Values-Based	Impact-First	Financial-First	Financial-First
APPROACH	<ul style="list-style-type: none"> <li>Alignment with values</li> <li>Exclude objectionable business activities</li> </ul>	<ul style="list-style-type: none"> <li>Investments made to generate environmental or social impact</li> </ul>	<ul style="list-style-type: none"> <li>Examples include climate change, ocean health and diversity</li> <li>Solutions-oriented</li> </ul>	<ul style="list-style-type: none"> <li>ESG risk &amp; opportunities analysis</li> <li>Demarcated between leaders or improvers</li> </ul>

## ESG Improvers: An Alpha Enhancing Factor

At Rockefeller Asset Management (RAM) we specialize in thematic and ESG integrated strategies seeking to generate excess returns while catalyzing positive change. In the years ahead, we believe that investors will increasingly differentiate between ESG Improvers and ESG Leaders, and that the former offers greater potential for generating uncorrelated alpha over the long run. Our economic and market rationale for ESG Improvers is as follows:

- Improvers will increasingly command a premium as consumers and investors reward sustainable firms.
- The market overemphasizes ESG Leaders while undervaluing Improvers.
- Improving ESG practices have the potential to increase brand value, enhance customer and employee loyalty, reduce costs and create competitive advantages.
- Improvers provide another lens into management quality, a key attribute of future business success.

We tested this hypothesis by quantifying ESG improvement working alongside Sakis Kotsantonis and KKS Advisors, a firm co-founded by Professor George Serafeim of Harvard Business School. Our backtested results covering US all cap equities from 2010 - 2020 indicated that top quintile ESG improvers outperformed bottom quintile "decliners" by 3.8% annualized. Relative to the Bloomberg US 3000 Index, the top quintile of improvers outperformed by 3.0% annualized while decliners underperformed by -0.8% annualized over the same period. The resulting work led to the creation of the **Rockefeller ESG Improvers Score™ (REIS)**, a score that ranks a company's improvement in performance on material ESG issues relative to peers. In order to test the strength of the signal while controlling for other factors, such as sector, size, value, growth, quality, etc., we collaborated with Bloomberg's portfolio and index research team to create mean-variance optimized portfolios. We maximized the REIS while constraining tracking error to 1% and the active factor risk (AFR) to 0%. The process isolated unexplained returns generated purely from ESG Improvement while controlling for other factors, such as sector, size, value, growth, quality, etc. The **Optimized ESG Improvers Portfolio** generated 0.5% excess returns annualized from 2010 to 2020 with 1.3% tracking error relative to the Bloomberg US 3000 Index. A description of our methodology, additional quantitative analysis covering the impact of implementing risk exclusion screens and integration with traditional investment factors, and practical applications of ESG Improvers for fundamental long-only, fundamental long/short and quantitative investors will follow in subsequent sections.

### Rockefeller ESG Improvers Score™ (REIS): Top Quintile Firms Outperform

#### Growth of \$1

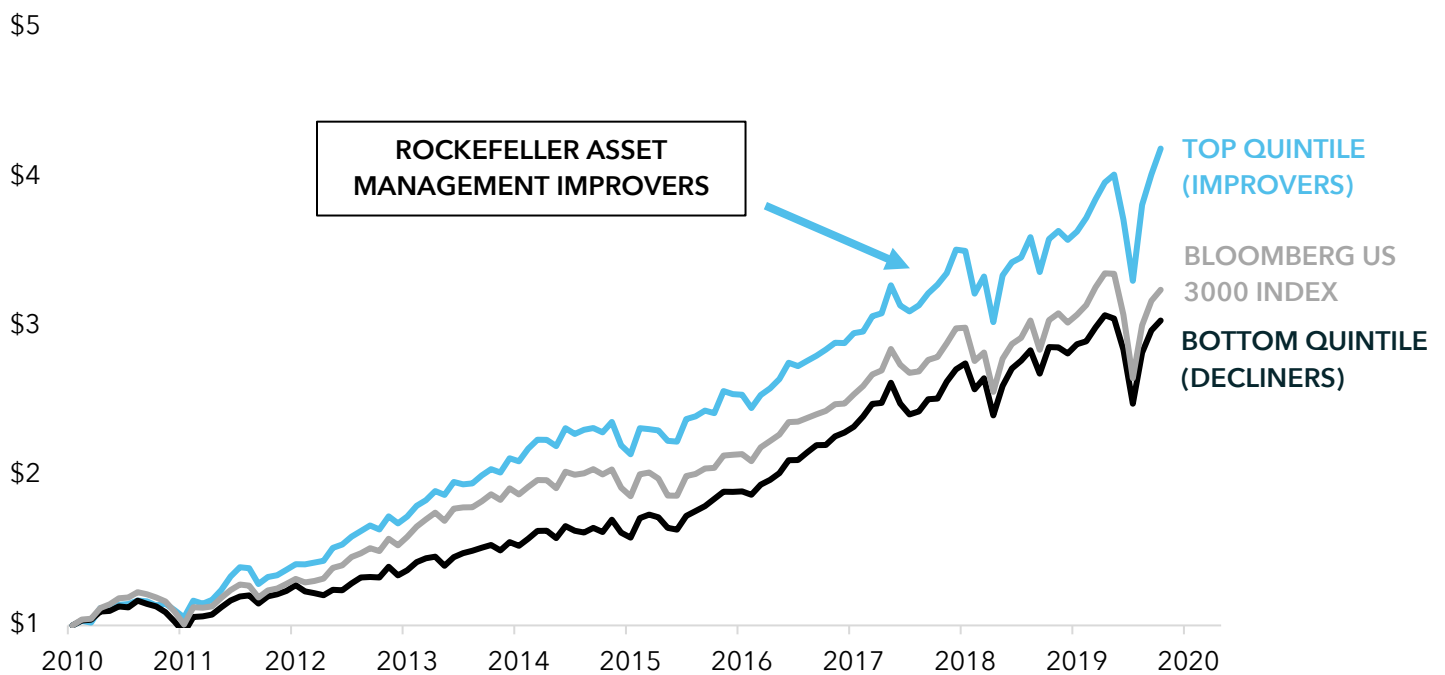


Exhibit-1: Cumulative returns of the top and bottom quintile of ESG improvers compared against the Bloomberg 3000 benchmark index covering data from 2010 - 2020.

Source: Rockefeller Asset Management

Conclusion is based on an optimized hypothetical ESG Improvers Portfolio, which seeks to isolate pure ESG Improvement while controlling for sector and factor biases. The hypothetical back-tested performance shown here was not calculated in the same manner as the Bloomberg Rockefeller ESG Improvers Index™ Family because, among other things, no quality and low volatility factors were applied and no negative screens were included in the analysis. The back-tested hypothetical performance information shown is not that of a Bloomberg Rockefeller ESG Improvers Index. Transaction costs not considered in this analysis; reflects the reinvestment of all distributions. It is not possible to invest directly in an index. Actual performance will differ. Please refer to the disclosures and methodology at the end of this presentation for additional information regarding the universe, methodology and inherent limitations.

## Quantifying ESG Improvement Starts with Materiality and Data Mapping

**Step 1: Materiality Mapping:** The process for creating the **Rockefeller ESG Improvers Score™ (REIS)** centers on our proprietary Materiality Map, which was developed in collaboration with our equity and ESG analysts and based on initial guidance from SASB. The Map identifies ESG issues that are material to the risk and return profile of companies across 77 Sustainable Industry Classification System (SICS®) industries. We identified a total of 34 material ESG issues, including air quality, climate physical risk, climate transition risk, customer privacy and data security, diversity and inclusion, labor rights management, talent attraction and board independence, among others. The median, minimum, and maximum number of material issues across the individual SICS industries is 14, 8, and 22, respectively.

**Step 2: Data Mapping:** Following the construction of the Materiality Map, an extensive data mapping exercise was carried out to determine which metrics best quantify each material ESG issue. Throughout the process we interviewed sixteen different ESG data providers, advancing six to trial where we mapped metrics to each issue on our Map and ran regressions against key financial indicators. Based on this exercise and our findings, ESG datasets from Bloomberg, Sustainalytics and ISS were chosen to construct our Improvers Scores.

**Step 3: Imputation:** Some reasons why investment managers have been skeptical of incorporating ESG data is the challenge posed by non-standardized and incomplete data and inadequate coverage history for backtesting purposes. For instance, much of the ESG data gathering efforts for large cap firms began only 10 years ago, and small cap stocks roughly five years ago. In an effort to fill in these gaps and quantify ESG improvement for a US all cap equity universe, we imputed the data using linear interpolation and other statistical approaches such as supervised machine learning. At the individual company level, linear interpolation techniques were used to fill in missing values of metrics which have at least two values in their time series data. In the second stage of interpolation, we used a supervised machine learning algorithm called Random Forest to predict missing values by grouping firms of similar peer-groups together. For example, a metric like GHG emissions could be completely missing, either because of non-disclosure from the company or the data provider. In those instances, predictive metrics from industry group peers can help estimate values. Taken together, approximately 30% to 50% of the data points were imputed throughout the history starting in 2009.

**Step 4: Calculating Material Issue Weights:** After integrating data providers and utilizing academic imputation best practices, a quantitative process was formulated to determine industry group specific material issue weights referred to as **Rockefeller ESG Relevance Ranking™**. The weights are calculated based on the statistical significance of regressions investigating the relationship between financial performance and material ESG issues. This is a necessary step as not all material ESG issues impact risk and return equally. Quantifying Material ESG issue scores relative to industry peers and material weights are key inputs for calculating a company's ESG trajectory.

**Step 5: Constructing the Rockefeller ESG Improvers Score™ (REIS):** The REIS is then derived by running regressions of the 12-month ESG momentum against key financial variables while controlling for the sector and market cap of the security. Within the construction process, we isolate the component of a firm's ESG trajectory unexplained by traditional financial variables such as price to book ratio and return on equity, making it useful when integrating with traditional investment factors. Analysis of the risk and return results, the implementation of risk exclusion screens and integration with traditional investment factors follows in the sections ahead.

## Risk and Return Results

At every quarter end the securities are divided into quintiles based on the **Rockefeller ESG Improvers Score™ (REIS)** ranking for the Bloomberg US 3000 universe. For intra-quarter months, the weights of securities within each quintile are

rebalanced based on market capitalizations. Exhibit-2 shows annualized return and annualized excess return relative to the Bloomberg US 3000 Index, as well as Sharpe and Information ratios for a hypothetical, backtested portfolio demarcated by quintile from 2010 - 2020. The top quintile Improvers outperformed the bottom quintile Decliners by 3.8% annualized. The signal is monotonic, in that outperformance grows with each quintile. On a risk-adjusted basis the top quintile Sharpe and information ratios of 1.1 and 0.8, respectively, are noticeably better than the bottom quintile decliners.

### Risk and Return Statistics: Quintile 1 Reflects Highest Ranked ESG Improvers

Quintile	Return (%)	Excess Return (%)	Sharpe Ratio	Information Ratio
1 (ESG Improvers)	15.8	3.0	1.1	0.8
2	14.5	1.7	1.0	0.6
3	13.1	0.2	0.9	0.07
4	12.8	-0.05	0.9	-0.01
5 (ESG Decliners)	12.1	-0.8	0.8	-0.2

*Exhibit-2: Risk return statistics from 2010-2020 of hypothetical, backtested market-cap weighted quintile portfolios constructed based on the REIS.*

In order to test the strength of the signal while controlling for other factors such as sector, size, value, growth, quality, etc., we collaborated with Bloomberg's portfolio and index research team to create mean-variance optimized portfolios. Portfolio optimization is a statistical technique used to maximize return, or in this instance ESG Improvement, at a given level of risk. We ran simulations to maximize the REIS while constraining the portfolio to 1% tracking error and 0% active factor risk (AFR). The AFR constraint helps ensure sector and other factor exposures are similar to the Bloomberg US 3000. The hypothetical, backtested **Optimized ESG Improvers Portfolio** outperformed by 0.5% annualized from 2010 to 2020 with 1.3% tracking error and similar standard deviation as shown in exhibit 3 below. Performance attribution for the Optimized ESG Improvers Portfolio is broken down into 5-year periods in exhibit-4. Attribution in both periods is driven by the selection effect, indicating that returns are derived from the REIS and not sector or factor biases.

### Results of Optimized ESG Improvers Portfolio

Active Factor Risk: 0%, Tracking Error = 1%			
Period: 2010-2020	ESG Improvers portfolio	Bloomberg US 3000	Active
Annualized return	13.3	12.8	0.5
Annualized risk	17.8	17.7	1.3

*Exhibit-3: Risk and return statistics for a hypothetical, backtested portfolio that maximized the REIS while constraining the portfolio to 1% tracking error and 0% active factor risk (AFR).*

## Performance Attribution for Optimized ESG Improvers Portfolio

Return Attribution		
Factors	Period: 2010-2015	Period: 2015-2020
Country	0.00	0.00
Industry	0.20	0.11
Style	0.17	0.68
Currency	0.00	0.00
Time	0.00	-0.05
Selection	4.96	2.27
<b>Cumulative Active Return (%)</b>	<b>5.33</b>	<b>3.02</b>

Exhibit-4: Performance attribution for a hypothetical, backtested portfolio that maximized the REIS while constraining the portfolio to 1% tracking error and 0% active factor risk (AFR).

## Understanding the Implications of Risk Exclusion Screens

We then analyzed the risk and return ramifications of incorporating screens designed to not invest in certain business activities. A summary of screens commonly applied to ESG strategies are listed below.



### Exclusions with **ANY** Involvement:

- UN Global Compact Controversies
- Controversial and nuclear weapons
- Mining



### Exclusions for Companies with **5% or More Revenue Exposure:**

- Tobacco
- Alcohol
- Adult entertainment
- Commercial gambling
- Private prisons
- Oil sands extraction
- Small arms
- Military contracting weapons



### Companies that generate **greater than 25%** of power from thermal coal or derive **greater than 25%** of revenue from thermal coal power generation

A total of 189 companies are screened out of the Bloomberg US 3000 Index. UNCG 5, Controversial Weapons 27, Small Arms 6, Tobacco 16, Alcohol 43, Adult Entertainment 1, Gambling 23, Private Prisons 2, Thermal Coal 22, Open Pit 3 and Mining 54. Numbers add to greater than 189 because some companies are involved in more than one negative screening category.



Working alongside Bloomberg’s portfolio and index research team we ran an optimization to construct a portfolio that did not invest in stocks with those business activities while maintaining similar sector and factor exposures relative to the Bloomberg US 3000 Index. The Optimized Risk Exclusion Portfolio outperformed the BBG US 3000 Index by 0.5% annualized with 1% tracking error from 2010 to 2020. We also compared risk-adjusted performance between the Optimized ESG Improvers Portfolio with and without risk exclusion overlays. The Sharpe ratio of the portfolio with the risk exclusion screens was 0.81 between 2010 – 2020 compared to 0.82 for the portfolio without a screen overlay.

### ESG Improvers Integrated with Traditional Factors

Until this point, the analysis consisted of a standalone ESG Improvers portfolio constructed based on the **Rockefeller ESG Improvers Score™ (REIS)** which led to the creation of a Rockefeller ESG Improvers factor. Next, we assessed the impact from integrating the ESG Improvers factor with traditional style factors to create a diversified multi-factor ESG Improvers portfolio. In collaboration with Bloomberg, the REIS was integrated with quality and low volatility style factors at 2.5% tracking error, 1% active non-factor risk and 60% annual turnover to create a hypothetical multi-factor portfolio (ESG Improvers + Quality + Low Vol Multi-Factor Portfolio). The definitions of quality and low volatility were derived from Bloomberg’s Fundamental Factor Model <sup>[8]</sup>. The ESG Improvers + Quality + Low Vol Multi-Factor Portfolio outperformed the Bloomberg US 3000 benchmark by 1.4% annualized from 2010 – 2020 with 2.3% tracking error. Not only did ESG Improvers + Quality + Low Vol Multi-Factor Portfolio outperform the benchmark, but it did so with noticeably less risk, resulting in 2.2% annualized alpha over the same time period. Equally noteworthy, the ESG Improvers + Quality + Low Volatility Portfolio outperformed a two-factor portfolio of quality and low volatility by 0.45% annualized. The information ratio of the two-factor quality and low volatility portfolio increases by about 50% from 0.44 to 0.62 when the ESG Improvers factor is integrated, demonstrating the benefits of utilizing ESG Improvers alongside traditional styles of factor investing.

### Multi-Factor Portfolio: ESG Improvers Added 45 bps Excess Return

	(2010 - 2020)	Quality + Low Volatility	Bloomberg US 3000	Active	
<b>Quality + Low Volatility ONLY</b>	Return (Annualized)	13.8%	12.9%	<b>1.0%</b> Excess Return	← ESG Improvers Factor Added ~45 bps Excess Return
	Standard Deviation	16.6%	17.7%	2.2% Tracking Error	
	ESG Improvers Score (σ)	0.12	0.08	0.04 Difference	
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	(2010 - 2020)	ESG Improvers Multi-Factor	Bloomberg US 3000	Active	
<b>WITH ESG Improvers Factor + Quality + Low Volatility</b>	Return (Annualized)	14.3%	12.9%	<b>1.4%</b> Excess Return	→
	Standard Deviation	16.6%	17.7%	2.3% Tracking Error	
	ESG Improvers Score (σ)	0.26	0.08	0.18 Difference	

Exhibit-5: Risk-return statistics for the hypothetical, backtested ESG Improvers + Quality + Low Vol Multi-Factor Portfolio compared to the Bloomberg US 3000 benchmark and a two factor quality and low volatility portfolio.

Source: Rockefeller Asset Management. 9/2010 - 6/2020; Max 60% Turnover; Constrain to 2.5% tracking error and 1% active non-factor risk. These are hypothetical backtested results. Transaction costs not considered in this analysis; reflects the reinvestment of all distributions. It is not possible to invest directly in an index. Actual performance will differ. Please refer to the disclosures and methodology at the end of this presentation for additional information regarding the universe, methodology and inherent limitations.  
For Institutional Investment Professional Use Only - Not For Use With Retail Investors

The ESG Improvers Factor was analyzed alongside value and momentum factors using a similar methodology as described above. The ESG Improvers + Value + Momentum Multi-Factor Portfolio outperformed a two-factor value and momentum portfolio by 1.1% annualized from 2010 - 2020. The information ratio jumped from -0.6 to -0.2 after incorporating the ESG Improvers factor.

<b>WITH ESG Improvers Factor + Value + Momentum</b>	<b>(2010 - 2020)</b>	<b>ESG Improvers Multi-Factor</b>	<b>Bloomberg US 3000</b>	<b>Active</b>	
Return (Annualized)		12.4%	12.9%	<b>-0.4%</b> Excess Return	← ESG Improvers Factor Added ~110 bps Excess Return
Standard Deviation		17.6%	17.7%	1.9% Tracking Error	
<hr/>					
<b>Value + Momentum ONLY</b>	<b>(2010 - 2020)</b>	<b>Value+ Momentum</b>	<b>Bloomberg US 3000</b>	<b>Active</b>	
Return (Annualized)		11.3%	12.9%	<b>-1.6%</b> Excess Return	←
Standard Deviation		17.3%	17.7%	2.6% Tracking Error	

*Exhibit-6: Risk-return statistics for the hypothetical, backtested ESG Improvers + Value + Momentum portfolio compared to the Bloomberg US 3000 benchmark and a two factor value and momentum portfolio.*

Source: Rockefeller Asset Management

The back-tested hypothetical performance information shown is not that of a Bloomberg Rockefeller ESG Improvers Index.

\*09/2010 - 06/2020; Max 60% Turnover; Constrain to 2.5% tracking error and 1% active non-factor risk. These are hypothetical backtested results. Transaction costs not considered in this analysis; reflects the reinvestment of all distributions. It is not possible to invest directly in an index. Actual performance will differ. Please refer to the disclosures and methodology at the end of this presentation for additional information regarding the universe, methodology and inherent limitations.

The alpha enhancement from incorporating ESG Improvers with traditional styles of factor investing indicates the uncorrelated nature of the ESG Improvers Factor. The results reinforce the potential alpha enhancement from incorporating ESG Improvement with traditional forms of investing.

## Applying ESG Improvers Methodology Across Various Styles of Investing

We believe that the **Rockefeller ESG Improvers Score™ (REIS)** has wide reaching applications across (1) long-only fundamental, (2) long-short fundamental, and (3) quantitative styles of investing.

1. At RAM, we have long-used materiality and ESG Improvers concepts alongside our fundamental, long-only actively managed research process. The REIS has the potential to supplement our bottom-up process and contribute to idea generation by sourcing investment candidates from top quintile improvers.
2. In addition to supporting the overall fundamental research process and contributing to idea generation for long-only investors, we are particularly excited about the opportunity to source potential short ideas from bottom quintile "decliners" for ESG integrated long-short strategies.

- We are exploring a suite of systematic strategies that blend the REIS with traditional investment factors such as value, quality, size, momentum and low volatility. We believe that this research could have extensive implications for factor-based investment strategies.

Looking forward, we intend to extend our analysis to developed market equities outside of the US and examine the implications of integrating the REIS into sector specific strategies. Early backtested results indicate that similar results are found across geographies and sector specific ESG Improvers portfolios outperform in sectors where there is a meaningful sample size of stocks, typically above 100. For example, in the information technology sector, where there were roughly 400 companies in our analysis, top quintile ESG improvers generated 23.8% annualized returns with a 1.4 Sharpe ratio compared to bottom quintile ESG decliners' returns and Sharpe ratio of 13.2% and 0.7%, respectively. For the information technology sector, top quintile ESG Improvers outperformed bottom quintile decliners by 10.4% annualized from 2010 - 2020.

Quintile	Annualized Return (%)	Sharpe Ratio
1 (ESG Improvers)	23.8	1.4
2	22.2	1.1
3	16.5	0.8
4	17.8	1.0
5 (ESG Decliners)	13.2	0.7

*Exhibit-7: Risk-return statistics for a hypothetical, backtested information technology sector specific ESG Improvers portfolios from 2010 - 2020.*

## Conclusion: ESG Improvers Process Enhances Traditional Styles of Investing

ESG integration is fast becoming mainstream with some of the world's largest institutional investors allocating capital to dedicated ESG strategies in search for alpha. Growing data availability allows investors to quantify the risk and return ramifications unlike no other time in history. While there remains skepticism about performance implications, recent studies and our analysis indicate that ESG information may be used as an alpha enhancing signal.

Over the last 18 months we collaborated with thought leaders and academics to create a signal called the **Rockefeller ESG Improvers Score™ (REIS)**. Top quintile improvers outperformed the Bloomberg US 3000 Index by 3.0% annualized since 2010 while bottom quintile decliners underperformed by -0.8% over the same period. The Optimized ESG Improvers Portfolio, which maximizes the REIS and controls for sector and factor biases by incorporating 1% tracking error and 0% active factor risk constraints generated 0.5% annualized excess returns compared to the Bloomberg US 3000 Index from 2010 - 2020. A three-factor portfolio consisting of ESG Improvers + Quality + Low Vol outperformed the Bloomberg US 3000 index by 1.4% annualized with 2.2% tracking error, and a two-factor portfolio of quality and low volatility by 0.45% annualized since 2010. Similarly, the three factor ESG Improvers + Value + Momentum portfolio outperformed a two-factor value and momentum portfolio by 1.1% annualized. This is further indication that ESG Improvers have the potential to enhance alpha when integrated with traditional styles of investing.

We believe that practical applications for fundamental long-only, fundamental long-short, and quantitative styles of investing are far reaching. Rockefeller Asset Management's investment analysts have long employed ESG Improver analysis to enhance the fundamental research process, contributing to stocks either entering or not being considered

for investment in bottom-up actively managed portfolios. We are particularly excited about the opportunity to source short ideas from bottom quintile “decliners” for long-short investors.

We hope that by publishing our research results we can help advance the understanding and benefits of ESG integrated research. Looking forward, we intend to extend our analysis to global developed market equities and explore a suite of systematic strategies that blend the REIS with traditional investment factors such as value, quality, size, momentum and low volatility and sector-specific portfolios. Moreover, our early research on sector-specific portfolios found that top quintile improvers outperformed bottom quintile decliners by 10.4% annualized since 2010 in a backtested, hypothetical portfolio consisting of stocks within the information technology sector.

At RAM, we have long believed that rigorous, ESG-integrated analysis coupled with deep shareholder engagement can deliver strong long-term results for our clients. To us, understanding secular environmental and social trends is tantamount to good investing. We think that the intellectual capital built throughout our 29-year ESG track record, our proprietary ESG Improvers methodology and award-winning research will continue to set us apart from the field.

## Methodology

Our process centers around RAM’s proprietary materiality map, which was developed in collaboration with our equity and ESG analysts and based on guidance from SASB. We then conducted an extensive data mapping project to determine which metrics best quantify each material ESG issue. After integrating data from various data providers, we utilized academic imputation best practices to approximate missing values which is especially important given that ESG data is not always available and is not reported in a consistent manner. Approximately 30-50% of the data used in calculating the Bloomberg Rockefeller ESG Improvers Index™ Family was derived in this manner. If ESG data were available for all issuers over all periods covered by this presentation, the hypothetical back-tested performance shown would likely have been different. We then developed a quantitative process to determine material issue weights referred to as Rockefeller ESG Relevance Ranking™. Material ESG issues can have varying impacts on financial performance. Weights are adjusted depending on the historical relationship between financial performance and material ESG metrics. The Rockefeller ESG Improvers Score™ (REIS) was then constructed to isolate the component of a firm’s ESG trajectory unexplained by traditional financial variables

## Limitations

ESG data is subjective and non-standardized, has a limited history, coverage gaps, challenges with timeliness and inherent biases. The analysis does not incorporate transaction costs.

## Universe

The universe consists of US equities across the market capitalization spectrum. There were structural shifts in constituents based on data availability. For example, little data exists for small cap firms prior to 2016.

## Backtested Performance

The input to the backtesting code is the quarterly time series of data, cleaned and imputed with fundamental financial data and Bloomberg ESG data using the methodologies described below.

- A regression is carried out every quarter. The residual of this regression is the component of the ESG Improvers that cannot be explained by the change in key financial variables.
- Stocks are demarcated by REIS quintiles for backtesting purposes.
- Rebalancing of the index+ based on REIS occurs quarterly, based on the rolling 12-month ESG momentum. Within each quarter, portfolio constituent weights are adjusted every month based on market cap.
- Every quarter quintiles index are constructed based on REIS and are market cap weighted.

## Rebalancing

- The backtested results were rebalanced quarterly based on REIS and monthly based on market capitalization.

## Hypothetical and Backtested Results Disclaimer

Hypothetical performance results shown in this presentation are backtested and do not represent the performance of any index or any account managed by RAM, but were achieved by means of the retroactive application of the methodologies described herein, certain aspects of which may have been designed with the benefit of hindsight. Examples of back-tested performance have several inherent limitations. Unlike an actual performance record, back-tested results do not represent actual performance of a portfolio managed by RAM over the period shown, are generally prepared with the benefit of hindsight and do not reflect the impact that material economic and market factors might have had on the management of the portfolio during the periods shown. There are numerous factors related to the markets in general or to the implementation of any specific investment program, which cannot be fully accounted for in the preparation of back-tested performance results and all of which can adversely affect actual investment results.

The hypothetical backtested performance does not represent the results of actual trading using client assets nor decision-making during the period and does not and is not intended to indicate the past performance or future performance of any account or investment strategy managed by RAM. If actual accounts had been managed throughout the period, ongoing research might have resulted in changes to the strategy which might have altered returns. The performance of any account or investment strategy managed by RAM will differ from the hypothetical backtested performance results shown herein for a number of reasons, including without limitation the following:

Although RAM may consider from time to time one or more of the factors noted herein in managing any account, it may not consider all or any of such factors. RAM may (and will) from time to time consider factors in addition to those noted herein in managing any account.

RAM may rebalance an account more frequently or less frequently than quarterly and at times other than presented herein. We have assumed quarterly rebalancing to create the back-tested results. RAM generally does not rebalance according to any predetermined schedule, and reviews rebalancing periodically based on substantive changes in market outlook or asset class valuations and client investment guidelines. This investment approach difference should be considered when evaluating the back-tested performance results presented herein.

- RAM may from time to time manage an account by using non-quantitative, subjective investment management methodologies in conjunction with the application of factors.
- The hypothetical backtested performance results assume full investment, whereas an account managed by RAM may have a positive cash position upon rebalance. Had the hypothetical backtested performance results included a positive cash position, the results would have been different and generally would have been lower.
- The hypothetical backtested performance results for each factor do not reflect any transaction costs of buying and selling securities, investment management fees (including without limitation management fees and performance fees), custody and other costs, or taxes - all of which would be incurred by an investor in any account managed by RAM. If such costs and fees were reflected, the hypothetical backtested performance results shown would have been lower.
- The hypothetical performance reflects the total return including reinvestment of dividends.
- Accounts managed by RAM are subject to additions and redemptions of assets under management, which may positively or negatively affect performance depending generally upon the timing of such events in relation to the market's direction.
- Simulated returns may be dependent on the market and economic conditions that existed during the period. Future market or economic conditions can adversely affect the returns.
- Actual performance will differ.

The performance of an actual portfolio may vary substantially from the hypothetical portfolio due to changes in interest rates and economic conditions, the availability of securities and other factors. We do not guarantee the performance of any investment or investment strategy and the value of the strategy may decrease in value or increase in value.

The hypothetical portfolio performance shown are gross and do not reflect deductions of advisory, custody and other fees and expenses that an investor would incur in the management of an advisory account. Rockefeller's standard management fees are disclosed in Part 2A of its Form ADV. The payment of these fees would reduce an investor's actual investment return over time. For instance, a portfolio valued at \$1,000 achieving an average annual return of 10 percent over a period of five years, before deducting a 1 percent per annum advisory fee paid monthly, would total approximately \$1,611 but only \$1,532 after deduction of fees.

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Future results may vary substantially from the back-tested results. There can be no guarantee that investment objectives or projected outcomes will be achieved. RAM considers the information in this material to be accurate, but does not represent that it is complete or should be relied upon as the sole basis for assessing investment performance or suitability for investment.

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