White Paper
Environmental, Social & Governance (ESG)

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ESG, Climate Metrics and Value Investing

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Executive Summary

Value indices could present a significant negative bias with regard to ESG and carbon securities relative to their Growth counterparts. Energy and Utilities that rank poorly with respect to carbon emissions tend to be overweight in such indices and Information Technology, Consumer Discretionary and Communication Services that rank highly from an ESG perspective tend to be underweight. Similarly, when Value and Growth indices are compared using different climate metrics, the profile of Value indices looks a lot worse than that of Growth, with higher carbon emissions and brown revenues and lower green revenues. Nevertheless, investors could dramatically improve the ESG profile of their Value portfolios by optimizing them to align with multiple objectives, including preserving exposure to the Value factor whilst improving the ESG and climate profile of their portfolios.

ESG Integration into Value Equities

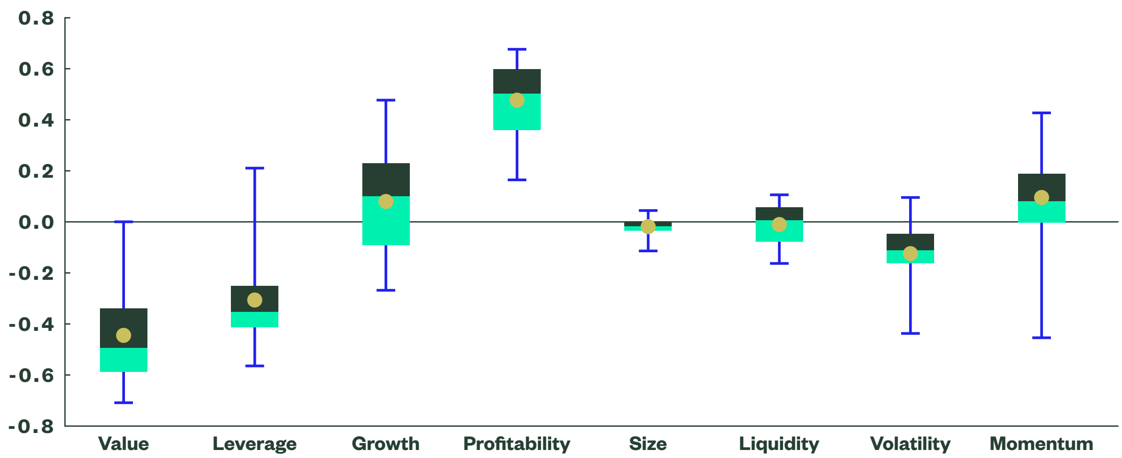
Environmental, Social, and Governance (ESG) factors and climate investing have become popular topics over the past few years, particularly outside of the United States (US). Demand for ESG products has dramatically increased, and in tandem, so has the supply of products.

In this short study, we will highlight that typical Value indices could present a significant negative bias with regard to ESG and carbon securities, particularly relative to their Growth counterparts. We will also demonstrate that investors who are concerned with this negative ESG/carbon bias can dramatically improve the ESG profile of a Value portfolio by applying optimization techniques, ensuring that they maintain their targeted exposure with a moderate active risk profile.

Factor Investing and ESG

There have been several studies analyzing the exposure of ESG securities and their correlation with traditional style factors. A recent study by Deutsche Bank showed that ESG securities tend to be positively correlated with factors such as Profitability, Momentum and Growth (Figure 1). Conversely, Value presents the strongest negative correlation to ESG.

Figure 1
Sustainalytics ESG Score Exposures



Source: Bloomberg, FactSet, Axioma, Sustainalytics, Deutsche Bank CIB Research, as at September 2021.

Value Indices Tend to Have Poor ESG and Carbon Exposure

In this study, we highlight two industry-standard Value and Growth indices — Russell 1000 Value and Russell 1000 Growth — for illustrative purposes. We begin by simply comparing the sector exposures of the Russell 1000 Value and Growth indices. We see that the Value index tends to significantly underweight Information Technology, Consumer Discretionary and Communication Services — sectors that tend to rank highly from an ESG perspective. Similarly, Energy and Utilities sectors that rank poorly with respect to carbon emissions tend to be overweight as well. These sector weightages partially explain the reason behind the poor ESG and carbon exposures in Value indices (Figure 2).

Figure 2
Russell 1000 Value Versus Growth Vis-à-Vis Their Sectoral Exposure

Sectors	Russell 1000 Value	Russell 1000 Growth	Difference
Financials	21.45	2.52	18.93
Health Care	17.34	9.19	8.15
Industrials	11.66	5.98	5.68
Utilities	4.85	0.03	4.83
Energy	5.10	0.33	4.78
Consumer Staples	7.18	3.86	3.32
Real Estate	4.71	1.69	3.03
Materials	3.64	0.97	2.66
Communication Services	8.23	12.64	-4.42
Consumer Discretionary	5.68	18.51	-12.82
Information Technology	10.15	44.29	-34.13

Note: The metrics represent GICS sector weight percentages. Source: FactSet, as at 29 September 2021.

By employing State Street Global Advisor's proprietary ESG scoring system, R-Factor, we can see that overall the Value index shows a much lower ESG score than the Growth index. When we compare the indices using different climate metrics, we observe once again that the profile of the Value index looks a lot worse than that of Growth, with higher carbon emissions, higher brown revenues and lower green revenues (Figure 3).

Figure 3
Russel 1000 Value Versus Growth Vis-à-Vis Their ESG and Carbon Exposure

	Russell 1000 Value	Russell 1000 Growth	Difference
R Factor			
R Factor Score	60.51	64.78	-4.26
ESG Score	59.15	63.41	-4.25
Corporate Governance Score	63.60	63.69	-0.09
Climate			
Carbon Intensity — Direct+First Tier Indirect	283.16	64.62	218.54
Carbon Emission — Scope 1+2	7,522,832.61	2,229,631.73	5,293,200.89
Total Reserves Emissions	146.97	0.96	146.01
Brown Revenue	3.26	0.15	3.11
Green Revenue	2.68	4.05	-1.36

Note: For details on the metrics used in this figure, please refer to the Appendix. Source: FactSet, Sustainalytics, State Street Global Advisors, as at 31 August 2021.

In addition to using ESG scores, we often see investors who believe in divesting from certain companies that are seen as "violators" of particular social and environmental principals. In conjunction with some of the most sophisticated investors in the world, State Street Global Advisors has developed a series of proprietary "point of view (POV) involvement" restriction lists. As evident in Figure 4, over 8% of the Value index includes securities that are flagged as "controversies", compared with less than 1% for the Growth index.

Figure 4
POV Involvement as Percentage of Russell Value and Growth Indices

	Russell 1000 Value	Russell 1000 Growth	Difference
POV Involvement (% Weight)	**8.01**	**0.86**	**7.15**
Controversial Weapons Weight	2.57	0.54	2.03
Tobacco Weight	0.98	0.23	0.75
UNGC Violations Weight	1.67	0.37	1.30
ESG Severe Controversies Weight	0.99	0.02	0.97
Civilian Firearms Weight	0.03	0.00	0.03
Thermal Coal Weight	2.02	0.00	2.02
Oil Sands Weight	0.00	0.00	0.00
Arctic Oil and Gas Exploration Weight	0.00	0.00	0.00
Swedish Ethical Council Weight	1.41	0.07	1.34

Source: FactSet, Sustainalytics, State Street Global Advisors, as at 31 August 2021.

Taking the above information into account, it could be argued that investing in a traditional Value index can lead to some conflicts of interests for those who see themselves as ESG conscious investors. At State Street Global Advisors, we believe that these trade-offs can be managed to craft portfolios that align with multiple objectives: preserving exposure to the Value factor whilst improving the ESG and climate profile of the portfolios.

Reconciling Value Investing With ESG Factors

We work closely with investors around the world to craft custom strategies that incorporate multiple objectives, such as factor investing and ESG/climate objectives. We have developed a transparent framework that allows investors to set their investment objectives and risk tolerance.

For the purposes of this paper, we assume that an investor's objective is to maximize the Russell 1000 Value tracking portfolio's ESG score (as measured by R-Factor), subject to a series of constraints. In particular, we highlight two key constraints below:

- A specific and tailored limit on ex-ante active risk (or expected tracking error between the portfolio and the index).
- A need to achieve a 70% reduction in a portfolio's weighted average carbon intensity (WACI), relative to the Russell 1000 Value Index.[1]

We test two solutions: one without and one with POV restrictions.

Case 1

For Case 1 we run an optimization based on the above objectives, subject to a 1% ex-ante tracking error as well as limits on active sector and security weights. The parent index is the Russell 1000 Value Index.

Case 2

For Case 2, we ran the same optimization objective as in Case 1 but also explicitly excluded all POV restrictions. Due to this, in Case 2, we allowed for larger security level misweights.

By leveraging an optimization-based portfolio construction approach, we were able to achieve our stated objectives for both Case 1 and Case 2 (Figure 5). We improved the strategy's ESG profile relative to the Value Index, even exceeding the Russell 1000 Growth Index ESG score of 64.78. We also reduced our WACI by 70%.

While brown and green revenues were not specifically targeted objectives in this strategy (they can be incorporated into any future scenarios), the strategies did improve on both metrics relative to the parent index.

Finally, note that Case 2 demonstrates that we can also efficiently remove all POV restrictions without majorly affecting the strategy.

Figure 5
Optimization-Based Portfolio Construction Approach

	Case 1	Case 2	Russell 1000 Value	Russell 1000 Growth
R Factor				
R Factor Score	70.14	69.96	60.51	64.78
ESG Score	68.69	68.49	59.15	63.41
Corporate Governance Score	65.67	65.89	63.60	63.69
R Factor Coverage				
Total Number of Securities	244.00	275.00	842.00	496.00
Coverage % of Market Value	99.78	99.73	99.70	99.59
Coverage % of Securities	96.31	96.00	97.27	95.77
Climate				
Carbon Intensity — Direct+First Tier Indirect	84.19	83.91	283.16	64.62
Carbon Emission — Scope 1	2,549,635.80	1,733,696.06	6,367,480.66	782,414.88
Total Reserves Emissions	80.16	106.00	146.97	0.96
Brown Revenue	1.99	1.92	3.26	0.15
Green Revenue	3.82	3.77	2.68	4.05
POV Involvement (% Weight)				
Controversial Weapons Weight	1.94	0.00	2.57	0.54
Tobacco Weight	0.00	0.00	0.98	0.23
UNGC Violations Weight	1.29	0.00	1.67	0.37
ESG Severe Controversies Weight	1.06	0.00	0.99	0.02
Civilian Firearms Weight	0.00	0.00	0.03	0.00
Thermal Coal Weight	0.00	0.00	2.02	0.00
Oil Sands Weight	0.00	0.00	0.00	0.00
Arctic Oil and Gas Exploration Weight	0.00	0.00	0.00	0.00
Swedish Ethical Council Weight	2.43	0.00	1.41	0.07
Total Involvement Weight	5.43	0.00	8.01	0.86

Note: For further details on the metrics used in this figure, please refer to the Appendix. Source: FactSet, Sustainalytics, State Street Global Advisors, as at 31 August 2021.

From a characteristics perspective, both Case 1 and 2 display very similar metrics relative to the index. One common consequence of optimized strategies is that the final outcome exhibits a reduction in the number of holdings. However, as Figure 6 shows, these strategies are very well diversified.

Figure 6
Optimization Strategy Well Diversified, Too

	Case 1	Case 2	Russell 1000 Value
Number of Securities	244.0	275.0	842.0
Market Capitalization	161,961.7	150,599.2	163,168.8
Active Share	46.5	46.2	—
Dividend Yield	1.9	1.9	1.9
Price/Earnings (P/E)	19.7	20.1	18.7
P/E Using FY1 Estimates	16.4	16.3	16.7
Estimated 3–5 Year EPS Growth	11.7	13.6	11.9
Price/Cash Flow	13.2	13.3	13.5
Price/Book	2.6	2.6	2.5
Price/Sales	2.1	2.2	2.2
Return on Equity	11.4	11.7	11.5

Source: FactSet, State Street Global Advisors, as at 31 August 2021. Diversification does not ensure a profit or guarantee against loss.

Both Case 1 and 2 resulted in a predicted tracking error of 1% as well as a predicted beta of 1 (Figure 7). Both cases also presented very small active factor exposures. This implies that the strategy is able to preserve its core exposure to the Value factor by not deviating meaningfully from the parent index.

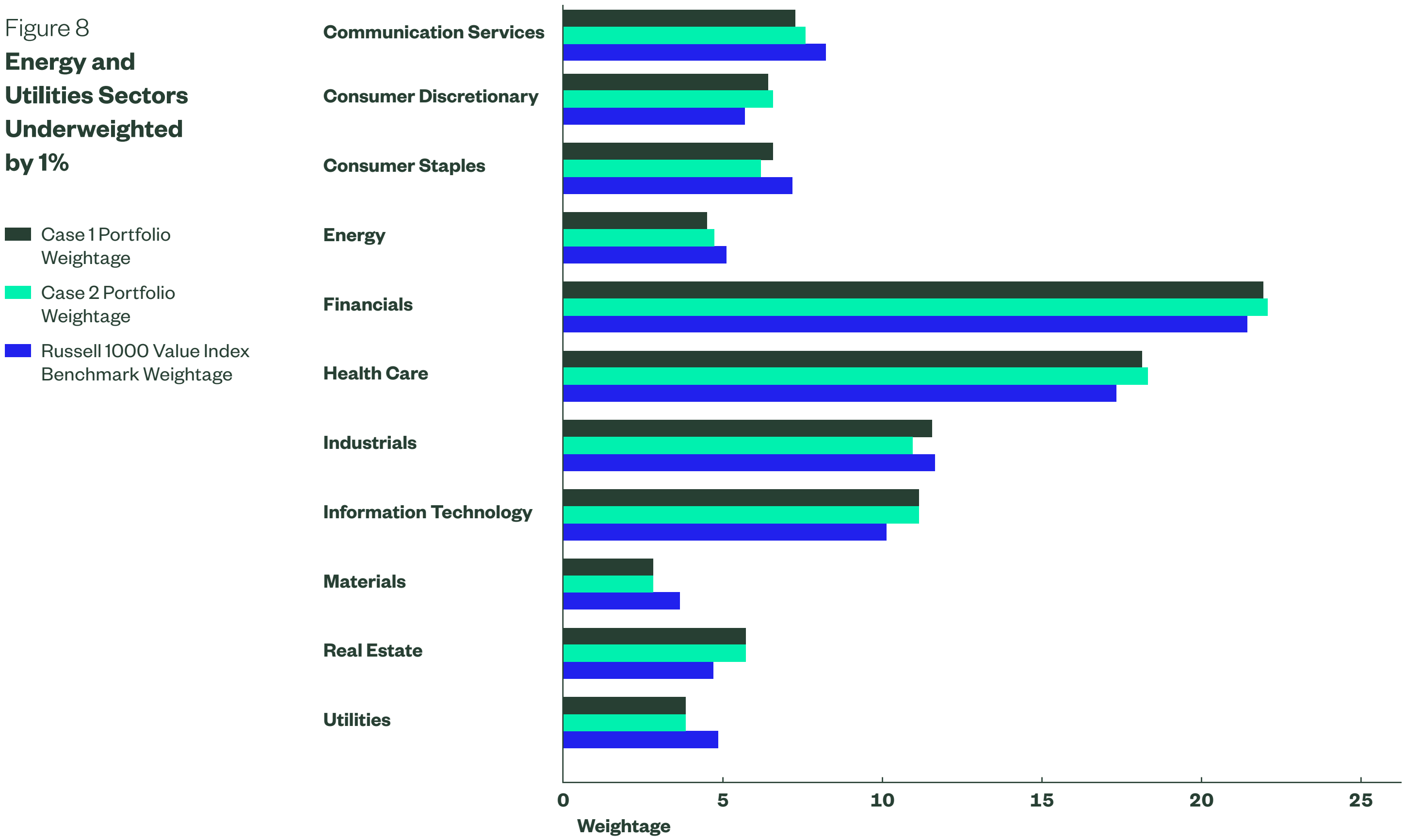
Figure 7
Optimization Strategy Preserves Value Core Without Meaningfully Deviating From Index

	Case 1	Case 2
Risk Characteristics		
Total Risk	12.80	12.81
Benchmark Risk	12.77	12.77
Predicted Beta	1.00	1.00
Predicted Tracking Error	1.00	1.01
Risk (%)		
% Asset Specific Risk	85.02	85.47
% Factor Risk	14.98	14.53
Exposure (Active Exposure)		
Market	—	—
Dividend Yield	0.01	0.05
Earnings Yield	-0.01	-0.01
Exchange Rate Sensitivity	-0.03	-0.02
Growth	-0.04	-0.02
Leverage	0.01	0.01
Liquidity	0.02	0.01
Market Sensitivity	0.01	0.00
Medium-Term Momentum	0.02	0.02
Midcap	-0.03	-0.04
Profitability	0.01	0.00
Size	0.01	-0.00
Value	-0.01	-0.01
Volatility	-0.01	-0.00

Source: FactSet, State Street Global Advisors, as at 31 August 2021.

In analyzing the sector exposures of Case 1 and 2 relative to the index, we see that given that the sector deviations were constrained in the optimization exercise, the relative deviations were very mild (+/- 1%). As expected, both Energy and Utilities sectors were underweighted by the maximum amount of 1% (Figure 8).

Figure 8
Energy and Utilities Sectors Underweighted by 1%



Source: FactSet, State Street Global Advisors, as at 30 September 2021.

Conclusion

Value investing presents negative exposure to ESG securities. However, investors who wish to reconcile these investment objectives could achieve this by building customized portfolios that will tailor their ESG and climate objectives, while taking into consideration their risk preferences and other objectives.

At State Street Global Advisors we have been working with some of the most sophisticated institutional investors around the world in developing and designing ESG and climate strategies that meet their specific needs. As this paper shows, the investment process employed can be replicated for investors looking to integrate ESG and/or climate objectives into their allocations without foregoing their desired factor exposures. We look forward to partnering with and helping investors to construct their ESG and climate portfolios.

Endnote

1 This figure was chosen for illustrative purposes only and can be adjusted based on the desired objectives of investors.

Appendix

Brown Revenue

Brown revenue is the proportion of revenues that a company derives from activities related to the extraction of fossil fuels, including power generation using fossil fuel based energy sources.

State Street Global Advisors uses S&P Trucost as the data source for brown revenue definitions and revenues. Units are a percentage from 0 to 100.

Green Revenue

Green revenue is the proportion of revenues derived from the environmentally sustainable economic activities of a company.

State Street Global Advisors uses FTSE as the source of data. FTSE's definition includes changes in a company's revenue mix, as its business model shifts to the delivery of goods, products and services that allow the world to adapt to, mitigate or remediate the impacts of climate change, resource depletion and environmental erosion. Units are a percentage number between 0 and 100.

Carbon Intensity

The amount of carbon by weight emitted per unit of economic activity. Note that the calculation of this number can vary depending on where it is referenced. Different sources define "economic activity" differently in terms of sources of revenues — e.g., scopes 1,2 and 3.

State Street Global Advisors uses S&P Trustcost as the data source for carbon intensity. S&P Trucost uses "proprietary carbon emissions" called Direct + First Tier Indirect. (In short, Trucost combines Scope 1 emissions plus CO_2 emissions from four additional sources (CCl_4, $C_2H_3Cl_3$, $CBrF_3$, and CO_2 from Biomass). This combined category is called "Direct." They then add "First Tier Indirect", which are emissions from a company's suppliers. This category includes Scope 2 and some upstream Scope 3 emissions.

Fossil Fuel Reserves

Reserves are areas where the existence of fossil fuels is "proven and probable, or possible" and where their extraction from the ground is technologically and economically feasible. Note that the calculation of this number can vary depending on where it is referenced.

State Street Global Advisors uses S&P Trucost as the source of data. Units are million metric tons CO_2 emissions.

R Factor

An ESG scoring methodology, proprietary to State Street Global Advisors. Drawing inputs from four best in class data providers and State Street Global Advisors' own corporate governance information as well as leveraging the SASB materiality map, R Factor is a transparent composite ESG scoring system.

Weighted Average Carbon Intensity

Weighted Average Carbon Intensity (WACI) is a popular metric used to quantify a portfolio's exposure to carbon-intensive companies, expressed in tons of CO_2 emissions/USD 1 million revenue. The Task Force on Climate-Related Financial Disclosures defines the formula for WACI as:

$$\sum_{n}^{i} \frac{\text{Current Value of Investment}_i}{\text{Current Portfolio Value}} * \frac{\text{Issuer's Scope 1 and Scope 2 GHG Emissions}_i}{\text{Issuers's US\$ 1 Million Revenue}_i}$$

About State Street Global Advisors

Our clients are the world's governments, institutions and financial advisors. To help them achieve their financial goals we live our guiding principles each and every day:

- Start with rigor
- Build from breadth
- Invest as stewards
- Invent the future

For four decades, these principles have helped us be the quiet power in a tumultuous investing world. Helping millions of people secure their financial futures. This takes each of our employees in 30 offices around the world, and a firm-wide conviction that we can always do it better. As a result, we are the world's fourth-largest asset manager* with US $3.86 trillion† under our care.

* Pensions & Investments Research Center, as of December 31, 2020.
† This figure is presented as of September 30, 2021 and includes approximately $59.84 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.