

# CRSP ISS ESG INDEXES

## Abstract

As ESG methods gain wider acceptance within the investment community, there is a need for transparent and unbiased benchmarks to help understand the connection between ESG metrics and portfolio performance.

The paper examines the properties of indexes resulting from 3 different methodologies that incorporate the ESG Performance Score provided by ISS.

By using a transparent approach, avoiding arbitrary exclusions, and including results from both ESG and the Remainder indexes, the new CRSP ISS ESG Indexes suite provides investors with a new toolset to benchmark ESG investing.

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# SUMMARY

In this paper, we examine the portfolio construction using the ISS ESG Performance Score and the performance of the resulting portfolios.

The paper is divided into 5 sections:

- Section 1: Background
- Section 2: A Need for Transparency
- Section 3: CRSP ISS ESG Indexes Construction
- Section 4: CRSP ISS ESG Indexes Backtest Analysis
- Section 5: Conclusion

## I. BACKGROUND

Environmental, Social, and Governance (ESG) ratings have risen to prominence in the past few years. While investing that considered non-financial objectives or screened out certain “sin stocks” (Renneboog, Horst and Zhang 2008), also known as Socially Responsible Investing (SRI), has existed for some time, the recent trend has been characterized by a notable increase in the breadth and scope of the ESG issues. Furthermore, the adoption of these broader set of ESG issues has also gained wider acceptance in the investing community. The Principles for Responsible Investment (PRI) community now reports 4,000 signatories, representing over \$121 trillion dollars in assets globally (PRI 2021). The impact has also been felt in the passive investment space. According to the Morningstar Passive Sustainable Funds report, sustainable index funds have grown to over \$50 billion in assets as of Q2’20, up from \$4.1 billion just 10 year ago. This growth in ESG funds has been driven by investor demand, as ESG issues have become a key focus within the broader society, as well as from fund managers, who have studied the impact of ESG metrics on companies’ performance (Morningstar Manager Research 2020).

Many ESG funds rely on ESG scores that seek to provide a quantitative measure regarding a firm’s overall ESG performance and guide investors in comparing and ranking companies relative to each other. An ESG score is usually a combination of multiple ESG metrics, where an ESG metric is a numerical evaluation of a particular ESG issue, like carbon emissions, diversity of workforce, governance, etc. However, there is no agreed upon list of ESG metrics or the standardized importance of ESG issues (CFA Institute Research Foundation 2020).

### Highlights of ESG Issues

Environmental	Social	Governance
<ul style="list-style-type: none"><li>• Climate change and carbon emissions</li><li>• Natural resource use and energy and water management</li><li>• Pollution and waste</li><li>• Ecodesign and innovation</li></ul>	<ul style="list-style-type: none"><li>• Workforce health and safety, diversity, and training</li><li>• Customer and product responsibility</li><li>• Community relations and charitable activities</li></ul>	<ul style="list-style-type: none"><li>• Shareholder rights</li><li>• Composition of boards of directors (independence and diversity)</li><li>• Management compensation policy</li><li>• Fraud and bribery</li></ul>

Source: (CFA Institute Research Foundation 2020)

An independent organization, Sustainability Accounting Standards Board (SASB), has been formed in order to address the complexities of ESG scores. SASB has proposed a framework that aims to establish and improve industry specific disclosure standards across financially material environmental, social, and governance topics that facilitate communication between companies and investors about decision-useful information.<sup>1</sup> While the majority of ESG data providers incorporate some aspects of SASB methodology in their evaluation framework, there is no requirement to strictly follow it. Furthermore, there is no legal requirement for companies to disclose the data identified by SASB, unlike with accounting regulations. Given the complexity of collecting data on ESG issues, identifying appropriate metrics for ESG issues, and combining individual metrics into an overall ESG score, it is not surprising that a recent academic research has found that ESG ratings produced by some data providers disagree with each other (Berg, Koelbel and Rigobon 2020).

The challenge with ESG has also received attention from government agencies across the world. In April 2020, the European council adopted<sup>2</sup> a process to establish a framework to facilitate sustainable investment. In the United States,

<sup>1</sup> <https://www.sasb.org/standards/process/active-projects/standards-internationalization-advancement/>, accessed 8/17/2021

<sup>2</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R0852>, accessed 8/17/2021

the SEC announced in March 2021 the creation of a Climate and ESG Task Force in the Division of Enforcement<sup>3</sup>, followed by an Executive Order on Climate-Related Financial Risk<sup>4</sup> issued on May 20, 2021. Finally, just recently DOL has issued a new proposal that would make it possible for ESG funds to become default options in 401(k) plans.<sup>5</sup> These efforts notwithstanding, it is unlikely that government rules will be able to resolve all the debates within the ESG scoring community, as a study on EU Taxonomy has concluded (ISS ESG Insights 2020).

Another key question about the incorporation of ESG into the investment process is the impact of ESG on the financial performance of companies. This is particularly important to address as a recent academic review has found that the vast majority of investors are still motivated by financial reasons, rather than ethical reasons, in using ESG data. Furthermore, the majority of the respondents to the survey suggested that ESG information is material to investment performance (Amel-Zadeh and Serafeim 2018).

There have been a number of academic studies (over 2,000) that examined connection between a firm's financial performance and ESG issues going back to 1970s (Friede, Busch and Bassen 2015). There also have been a number of analyses of SRI or ESG-based portfolio performances (Renneboog, Horst and Zhang 2008). While some studies have found that “sin” stocks (i.e. stocks of public firms producing alcohol, tobacco, etc.) have outperformed non-sin stocks (Hong and Kacperczyk 2009), other studies have discovered the opposite (Willis Towers Watson 2018).

More recent studies found that depending on metrics and incorporation of ESG into a portfolio construction, the ESG-based portfolios could have better risk-return profile (Dunn, Fitzgibbons and Pomorski 2018). Furthermore, an analysis of the behavior of funds during the COVID-19 collapse documented that funds with higher sustainability ratings outperformed those with lower ratings (Pastor and Vorsatz, Mutual Fund Performance and Flows during the COVID-19 Crisis 2020). Yet, theoretical models (Pastor, Stambaugh and Taylor, Sustainable Investing in Equilibrium 2020), as well as a recent empirical analysis (Pastor, Stambaugh and Taylor, Dissecting Green Returns 2021), point out that the ESG outperformance may be a temporary phenomenon.

Thus while ESG issues are becoming important for investors, there is a clear need for tools and more data to enable researchers to better understand the complex interactions between ESG, company performance and portfolio returns.

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<sup>3</sup> <https://www.sec.gov/news/press-release/2021-42>, accessed 8/17/2021

<sup>4</sup> <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/05/20/executive-order-on-climate-related-financial-risk/>, accessed 8/17/2021

<sup>5</sup> <https://www.nytimes.com/2021/10/13/your-money/biden-esg-retirement-investing.html>, accessed 10/14/2021

## II. A NEED FOR TRANSPARENCY

The term ESG has been used to describe a broad variety of approaches. The lack of clarity of what ESG investing is makes it hard to understand which specific approach is being used by an investment professional.<sup>6</sup> To avoid confusion, we would like to give rough definitions of the most commonly used investing approaches that fall under the ESG umbrella.

Investing Style	Definition	Example
<b>Negative Screens/SRI</b>	Negative screens avoid investing in certain companies based on industry, products, practices that are deemed to have negative societal and/or environmental impacts under certain frameworks, like UN Global Compact	Excluding tobacco, alcohol, or weapons manufacturers from portfolios
<b>Thematic/Impact Investing<sup>7</sup></b>	Impact investing is marked by an intentional desire to contribute to measurable social or environmental benefit. Impact investors aim to solve problems and address opportunities	Provides capital to address the world's most pressing challenges in sectors such as sustainable agriculture, renewable energy, conservation, microfinance, and affordable and accessible basic services including housing, healthcare, and education
<b>ESG Investing</b>	Constructing portfolios using ESG score that evaluates companies on material environmental, social and governance issues	Using an ESG score to select companies into a portfolio similar to other factors like Size, Value/Growth, Profitability, etc.

As this paper proceeds, when it speaks about ESG investing, it is referring specifically to the ESG Investing style described in the above table. That is we believe that by incorporating ESG score in the portfolio construction, investors are attempting to systematically incorporate material ESG data to alter the resulting portfolio's risk-return profile.

While many of the existing passive ESG products use ESG scores (Morningstar Manager Research 2020), it is important to highlight that the majority of the existing products also employ exclusions of the controversial products, industries, etc.

There are two potential issues with employing exclusionary filters in addition to using the ESG scores. The first potential problem is that the resulting products obfuscate the impact of ESG score on the portfolio's performance – is it the exclusions or the ESG score that influence the product performance? The second potential issue is that exclusions obfuscate the impact of the ESG score on portfolio construction. It is hard for investors to figure out why a certain company is excluded from the final portfolio – is it due to ESG score being below a threshold, or is it because of company's involvement in a certain product or industry. Therefore, exclusions conceal the ESG scores' methodology from investors' scrutiny. Since many ESG scores are supposed to incorporate the evaluation of the company's behavior

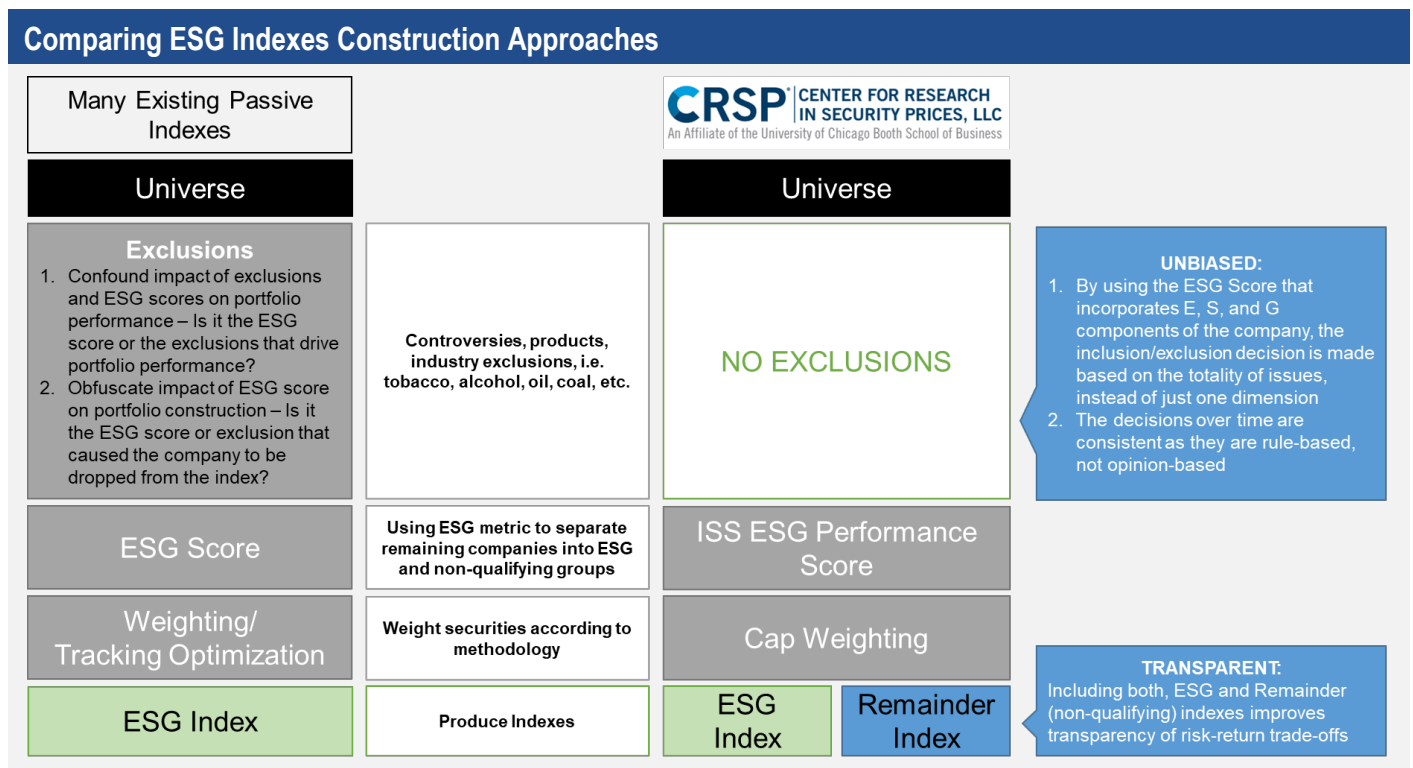
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<sup>6</sup> <https://www.bloomberg.com/news/articles/2021-08-18/-35-trillion-in-sustainability-funds-does-it-do-any-good>

<sup>7</sup> <https://thegiin.org/impact-investing/need-to-know/#what-is-impact-investing>

with respect to a variety of E, S, and G metrics, then, if it is done properly, it should be possible to exclude controversial companies using only the ESG score.<sup>8</sup>

This is why CRSP does not believe that exclusion of entire industries or companies that may not conform to certain broad frameworks, such as tobacco or alcohol producers, is a preferable ESG portfolio practice. Instead, CRSP believes that it is more advantageous to use the ESG scores to methodically identify and measure such candidates for participation or exclusions in ESG portfolios. Furthermore, CRSP also believes that it is important to provide visibility into the performance of non-qualifying companies, i.e. companies not included using ESG scores. By presenting investors with both ESG and non-qualifying companies' portfolios, the product provider enables better understanding of the risk-return trade-offs.



<sup>8</sup> <https://insights.issgovernance.com/posts/commentary-can-a-tobacco-firm-really-be-sustainable-yes-according-to-flawed-esg-ratings-iss-esgs-view/>

### III. CRSP ISS ESG INDEXES CONSTRUCTION

CRSP has designed three sibling ESG indexes in its new CRSP ISS ESG Indexes suite, utilizing the independently-generated ESG Performance Score from ISS.<sup>9</sup> The suite provides transparent benchmarks to categorize constituents' ESG performance within the US market. Within each sibling there are 2 indexes (the “pair”) – one comprised of securities that passed the applicable ESG threshold (the “ESG” or “Qualifying” index), and the other comprised of securities that did not pass the threshold (the “Remainder” or “Non-Qualifying” index). The goal of each pair is to give investors a transparent, distinguishable and comparative offering with respect to ESG.

ESG Sibling	Index Name	NASDAQ Symbol	
		Total Return	Price Return
CRSP ISS ESG Prime	CRSP ISS US Large Cap ESG Prime Index	CLESGPT	CLESGP
	CRSP ISS US Large Cap ESG Non-Prime Index	CLESGNPT	CLESGNP
CRSP ISS ESG	CRSP ISS US Large Cap ESG Index	CLESGT	CLESG
	CRSP ISS US Large Cap ESG Remainder Index	CLESGRT	CLESGR
CRSP ISS ESG Industry Balanced	CRSP ISS US Large Cap ESG Industry Balanced Index	CLESGBT	CLESGB
	CRSP ISS US Large Cap ESG Industry Balanced Remainder Index	CLESGBRT	CLESGBR

It is important to note, that unlike our market capitalization indexes that use cumulative cap to define different market cap segments, CRSP ISS ESG indexes use company counts to divide CRSP US Large Cap into ESG and Remainder Indexes. The usage of counts in CRSP ISS ESG indexes is purposeful – using counts instead of cumulative cap minimizes potential bias towards larger companies.

**CRSP ISS ESG Prime** – Provides portfolios to compare “Best-in-Class” ESG companies vs. other companies within CRSP US Large Cap. This sub-family uses the ISS “Prime” indicator. Under the ISS ESG framework, Prime status is granted to industry leaders who fulfill the highest performance expectations. Prime rated companies are considered by ISS to be well-positioned to, on the one hand, adequately manage key ESG risks associated with their specific business model, and, on the other hand, capitalize on opportunities offered by transformations towards sustainable development. Prime status is attributed to companies that fulfill ambitious performance requirements regarding the most material topics, taking into account their individual risk exposure.<sup>10</sup>

**CRSP ISS ESG** – Provides portfolios to compare the respective top half vs. bottom half companies within CRSP US Large Cap based on the ISS ESG Performance Score. ISS ESG Performance score enables ESG comparison of companies across different sectors. The ESG and Remainder portfolios divide the CRSP US Large Cap index, using relative ESG comparison instead of absolute, as in the case with CRSP ISS ESG Prime. This sub-family allows comparison of ESG and Remainder performance based only on ESG score, regardless of the sector.

<sup>9</sup> For more information about ISS ESG Performance Score please refer to documentation at <https://www.issgovernance.com/esg/ratings/corporate-rating/>

<sup>10</sup> <https://www.issgovernance.com/esg/ratings/corporate-rating/>

**CRSP ISS ESG Industry Balanced** – Similar to CRSP ISS ESG, except that it provides portfolios of the respective top half vs. bottom half companies in CRSP US Large Cap within each sector based on the ISS ESG Performance Score. CRSP uses FTSE’s Enhanced Industry Classification Benchmark (EICB)<sup>11</sup> for sectors definition. This approach ensures that the ESG portfolio includes companies from each sector in CRSP US Large Cap. Thus sub-family enables comparison of the ESG vs. Remainder when representation of sectors is similar to CRSP US Large Cap.

### CRSP ISS ESG Indexes Suite – Portfolio Construction Illustration

Index Sub-Family	CRSP ISS ESG Prime	CRSP ISS ESG	CRSP ISS ESG Industry Balanced
Universe	CRSP US Large Cap – Covers 85% of US Investable Market		
Selection Universe	CRSP US Large Cap		EICB-based Sector within CRSP US Large Cap
Selection Methodology	ISS ESG Performance Score >=50	Top ½ of companies based on ISS ESG Performance Score – ESG (Qualifying) Bottom ½ of companies based on ISS ESG Performance Score – Remainder (Non-Qualifying)	
	Selects companies that are designated as Prime by ISS	Splits selection universe in half based on count of companies sorting by ISS ESG Performance Scores.  <b>Example:</b> Out of 550 companies, ESG (Qualifying) index would select top 275 companies with the highest ISS ESG Performance Score	
Security Weighting	Value Weighted, Float-Adjusted – to reflect what is available to investors		

For more information on CRSP ISS ESG Indexes methodology, please refer to the CRSP methodology guide: <https://www.crsp.org/indexes-pages/crsp-us-equity-indexes-methodology-guide>

<sup>11</sup> FTSE Industry Classification Benchmark (ICB®) is a product of FTSE International Limited and has been licensed for use. FTSE Russell Press Release, “FTSE Russell announces enhancements to its Industry Classification Benchmark (ICB) following Market Consultation,” September 6, 2017, <https://www.ftserussell.com/press/ftse-russell-announces-enhancements-its-industry-classification-benchmark-icb-following>



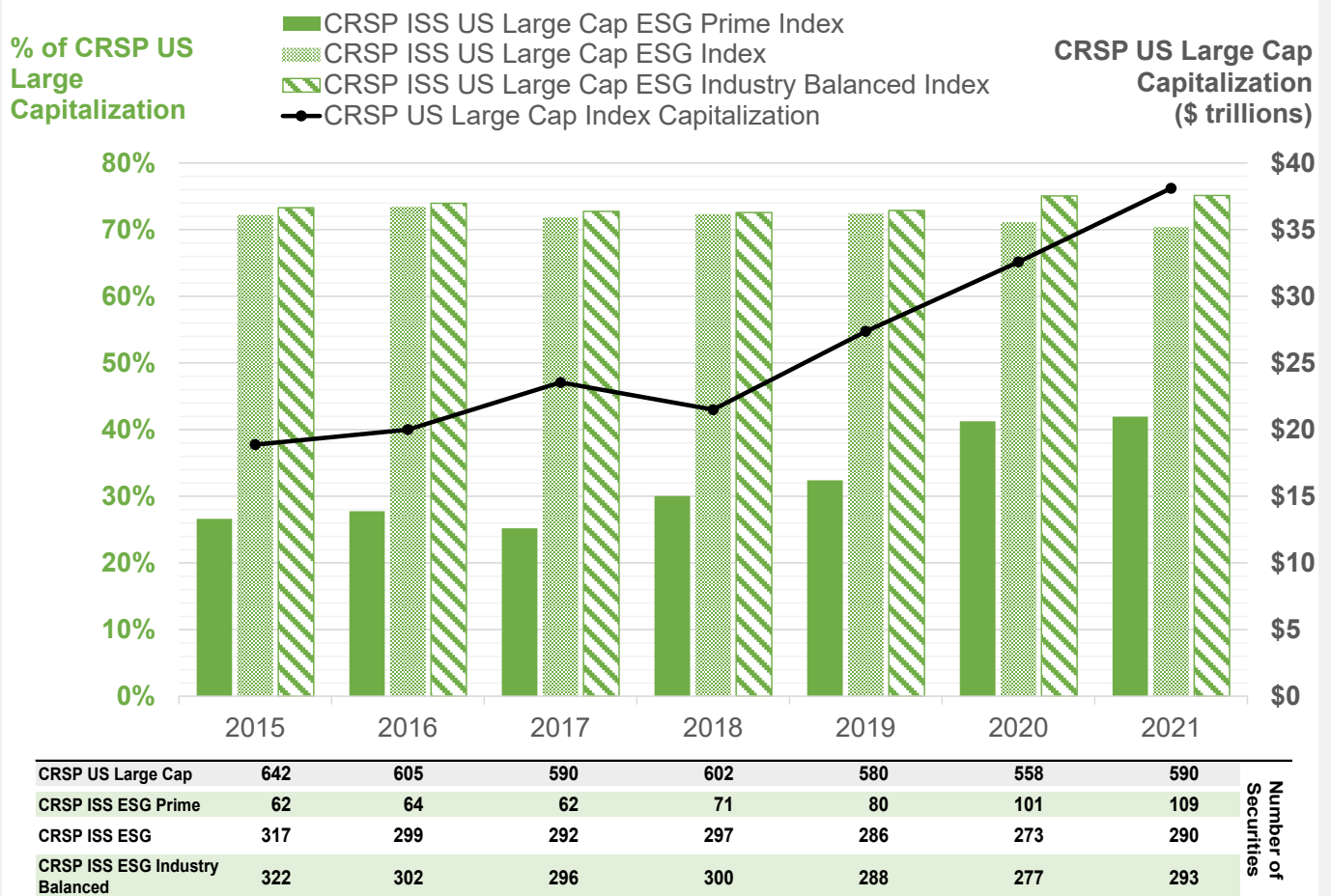
## IV. CRSP ISS ESG INDEXES BACKTEST ANALYSIS

In order to analyze CRSP ISS ESG indexes performance, we simulated indexes using historical data from 12/8/2014 through 9/3/2021. In order to conduct a more accurate comparison between CRSP ISS ESG indexes and CRSP US Large Cap, the analysis below uses the simulated performance of CRSP US Large Cap, instead of the live data. For analysis purpose we only use full month data, so our analysis period is restricted to the period 1/1/2015 through 8/31/2021.

### A. CRSP ISS ESG Indexes Properties

As Chart 1 shows, differences in methodology impact the three sub-families' capitalization and number of securities. Given the most selective nature of the "Prime" status, CRSP ISS ESG Prime Index has the lowest number of securities and capitalization relative to CRSP US Large Cap Index. As of June 2021, CRSP ISS ESG Prime was slightly above 40% of CRSP US Large Cap total capitalization and included 109 securities, approximately 1/5 of the number of securities in CRSP US Large Cap.

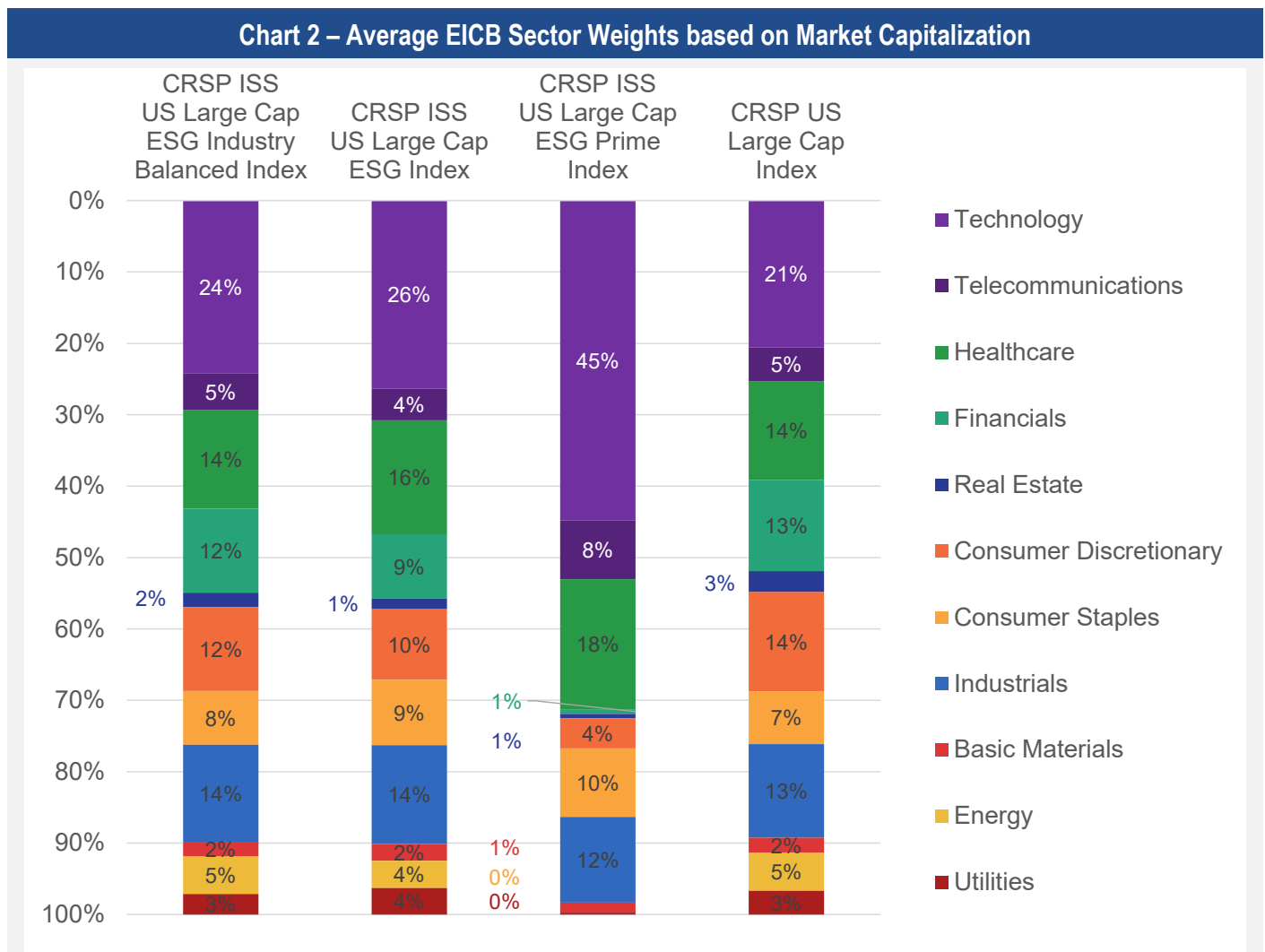
**Chart 1 – CRSP ISS ESG Indexes Coverage of CRSP Large Cap Index: Capitalization and Counts**



Note: Numbers represent number of securities within the index; data as of end of year, except for 2021, where data is as of 6/30/2021

CRSP ISS ESG Index, on the other hand, contained roughly ½ the number of securities, 290, and was approximately 70% of CRSP US Large Cap capitalization. It important to note that both, CRSP ISS ESG and CRSP ISS ESG Industry Balanced Indexes, limit their membership to half of the companies within CRSP US Large Cap with the highest ISS ESG Performance Score.<sup>12</sup> While the methodology restricts the number of securities, as evident from Chart 1, historically, this approach translated into a fairly constant capitalization of CRSP ISS ESG and CRSP ISS ESG Industry Balanced Indexes relative to the CRSP US Large Cap index. Given that CRSP ISS ESG Prime doesn't restrict the number of securities or capitalization, we would expect that its size relative to CRSP US Large Cap to be less stable.

Chart 2 shows the average EICB sector allocations over the duration of the backtest analysis from 1/1/2015 through 8/31/2021.<sup>13</sup> The weights are based on float-adjusted market capitalization.



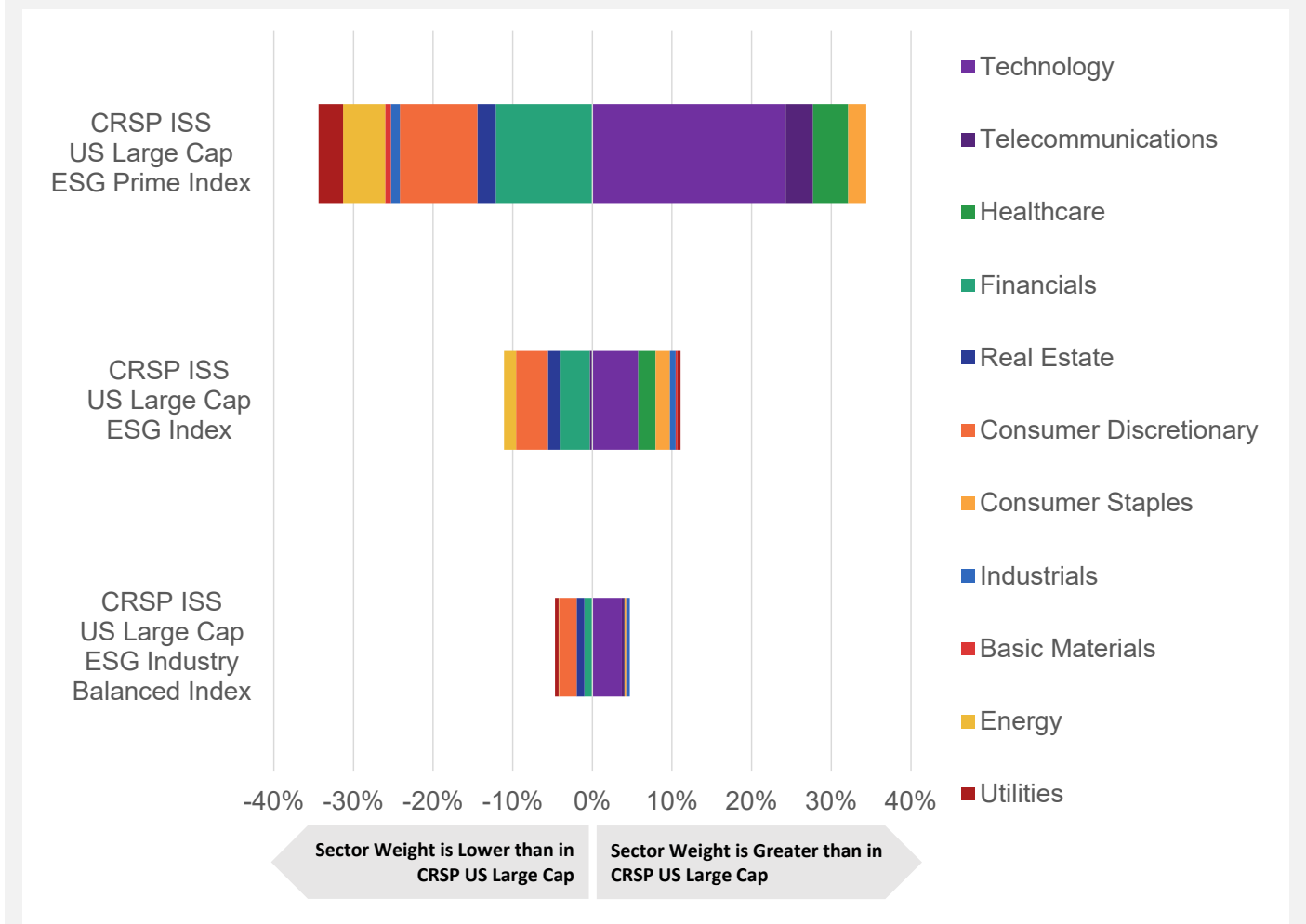
Note: Average EICB sector weights over the analysis period 1/1/2015 – 8/31/2021; weights are based on float-adjusted market capitalization

<sup>12</sup> The difference in counts, which represent securities, is due to companies having multiple share classes, i.e. Alphabet, Berkshire, etc.

<sup>13</sup> For more details on the CRSP usage of EICB for its sector indexes refer to the [public announcement](#) and [white paper](#)

As illustrated in Chart 3, the CRSP ISS US Large Cap Prime and CRSP ISS US Large Cap ESG indexes have noticeable tilts towards certain EICB sectors when compared to the CRSP US Large Cap Index. The difference is particularly large in the Technology sector, where all CRSP ISS ESG Indexes are overweight relative to the underlying universe. Although not entirely surprising, this could potentially be a problem for an investor who doesn't want a sector over-allocation caused by the ESG score. This problem is almost entirely resolved when we construct CRSP ISS US Large Cap Industry Balanced index. The slight deviations from perfectly matching CRSP US Large Cap index sector weights can be explained by the discrete nature of the weights – since we assign companies, inclusion or exclusion of a single company, depending on its size, could slightly offset the sector weight for the Industry Balanced index.

**Chart 3 – Differences in EICB Sector Weights between CRSP ISS ESG Indexes and CRSP US Large Cap Index**



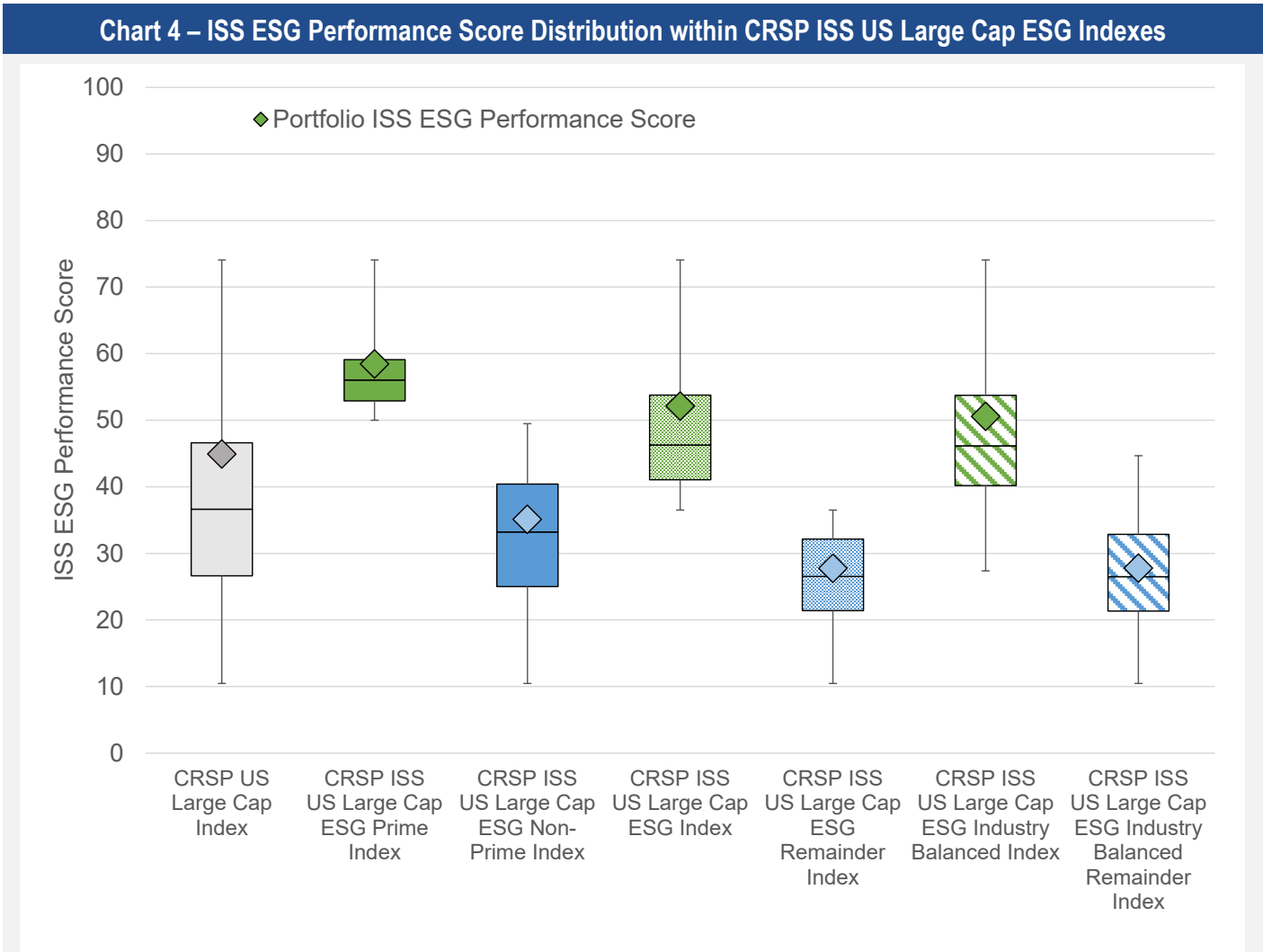
Note: Average EICB sector weights for the analysis period 1/1/2015 – 8/31/2021 are used in computation; weights are based on float-adjusted market capitalization

Another important characteristic to consider about the CRSP ISS ESG indexes is the impact of the methodology on the distribution of companies' ISS ESG Performance Scores. Chart 4 shows how the methodology restricts the companies with lower ISS ESG Performance Score from being included in the ESG indexes within each sub-family. For example, the CRSP ISS ESG Prime Index only includes companies from CRSP US Large Cap index that have ISS ESG Performance Score 50 or higher. Such companies are outliers, as most of them are beyond the 3<sup>rd</sup> quartile cut-off in

CRSP US Large Cap. As a result, CRSP ISS ESG Prime Index has the highest Portfolio ISS ESG Performance Score. Portfolio level score is computed by weighting companies' ISS ESG Performance Score by the corresponding weight in the index.

While CRSP ISS Prime and CRSP ISS ESG sub-families divide the CRSP US Large Cap Index in a non-overlapping fashion from the perspective of ISS ESG Performance Scores, CRSP ISS ESG Industry Balanced indexes do not. This is due to differences in the ISS ESG Performance Score distributions within EICB sectors. Since certain sectors due to the nature of companies' operations have lower ISS ESG Performance Score distributions, the methodology that splits each sector in half forces the index to include companies with lower ISS ESG Performance Scores. This is a necessary trade-off to ensure that all industries from the initial universe are represented in the ESG Industry Balanced index.

Despite the differences in the sector allocations, Chart 4 highlights that Portfolio ISS ESG Performance Scores for CRSP ISS ESG and CRSP ISS ESG Industry Balanced sub-families are very close.

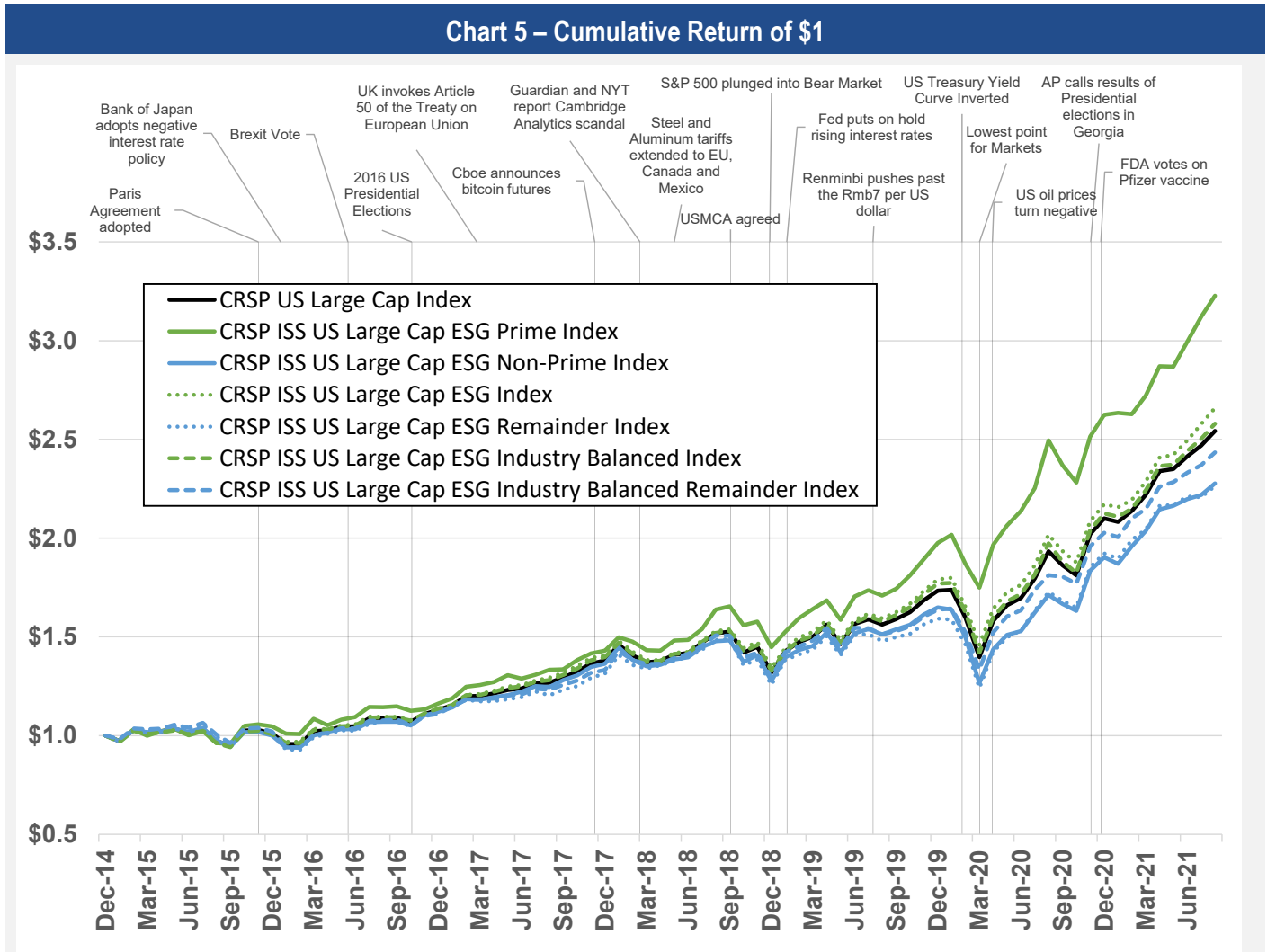


Note: Data as of 6/30/2021; securities with missing ISS ESG Performance Score are assigned a score of 0 based on the methodology; securities with missing scores are excluded from the chart; Portfolio ISS ESG Performance Score is a weighted score for the entire index, weighting each company's ISS ESG Performance Score by its weight in the index.

## B. CRSP ISS ESG Indexes Performance Analysis

### Risk-Return Profile

As Chart 5 shows all three sub-families, CRSP ISS ESG Prime, CRSP ISS ESG, CRSP ISS ESG Industry Balanced, split CRSP US Large Cap index into ESG indexes that outperform it, and Remainder indexes that underperform. CRSP ISS ESG Prime shows the greatest outperformance relative to CRSP US Large Cap over the backtest period.



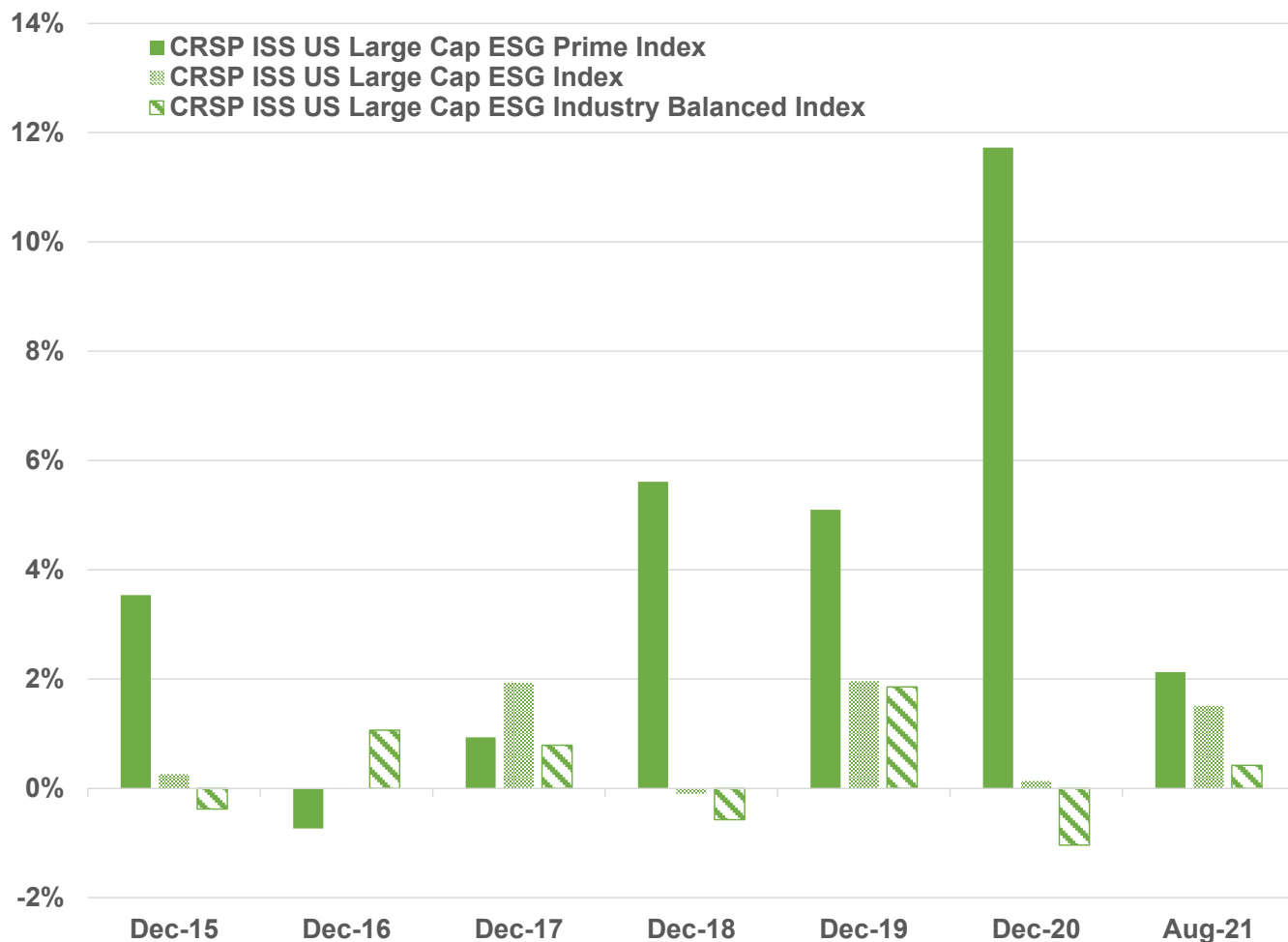
Note: Data for period 1/1/2015 – 8/31/2021; total returns are used in computations

To examine whether the cumulative performance is a result of a consistent behavior, we charted the annual outperformance of CRSP ISS ESG indexes over the CRSP US Large Cap. As Chart 6 shows, CRSP ISS ESG indexes consistently outperformed the CRSP US Large Cap index throughout the analysis period.

The findings are not inconsistent with the academic findings examined earlier. Given a limited analysis period, and that the majority of data follows the adoption of Paris Agreement, the outperformance of ESG indexes could be explained by the theoretical models in more recent studies (Pastor, Stambaugh and Taylor, Sustainable Investing in Equilibrium 2020),

as well as empirical analysis (Pastor, Stambaugh and Taylor, Dissecting Green Returns 2021), that found “that green stocks typically outperform brown when climate concerns increase.”

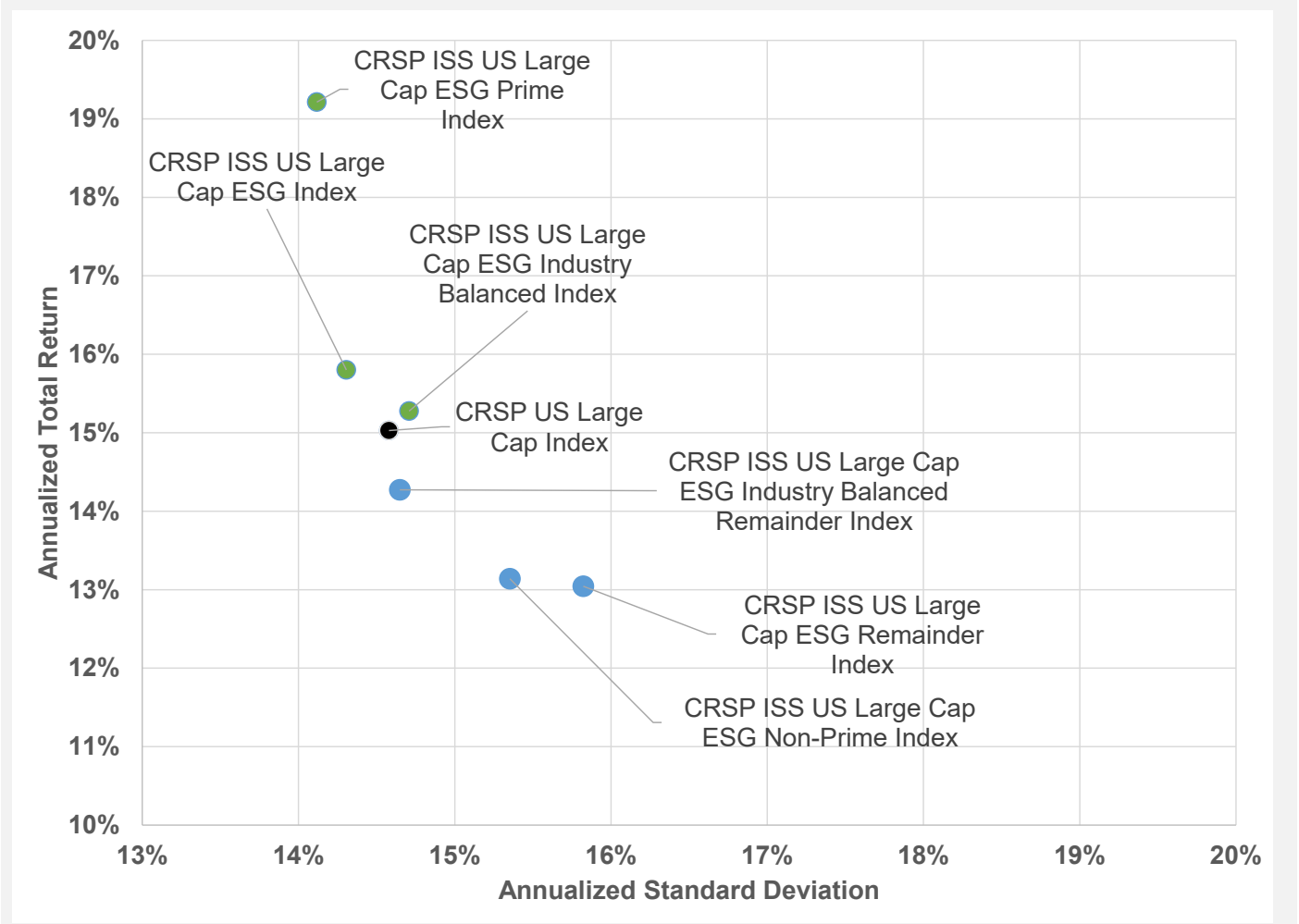
**Chart 6 – Annual CRSP ISS ESG Indexes Performance Relative to the CRSP Large Cap Index**



Note: Data for period 1/1/2015 – 8/31/2021; total returns are used in computation

To better understand the performance of the resulting indexes, we look at the risk-return profile. As seen from Chart 7, the ESG indexes outperformed the CRSP US Large Cap, exhibiting lower standard deviation and higher total returns. It is also notable that the Remainder portfolios underperformed CRSP US Large Cap. As such, the ESG and Remainder indexes exhibited opposite behavior over the backtest period. Again, the results are not inconsistent with the existing academic literature (Dunn, Fitzgibbons and Pomorski 2018) that finds that “ESG information may play a role in investment portfolios that goes beyond the ethical considerations and may inform investors about the riskiness of the securities in a way that is complementary to what is captured by traditional statistical risk models. Investors interested in tilting toward safer stocks may be able to combine the two to build more stable and robust portfolios.”

**Chart 7 – Risk/Return Profile of CRSP ISS US Large Cap ESG Indexes**

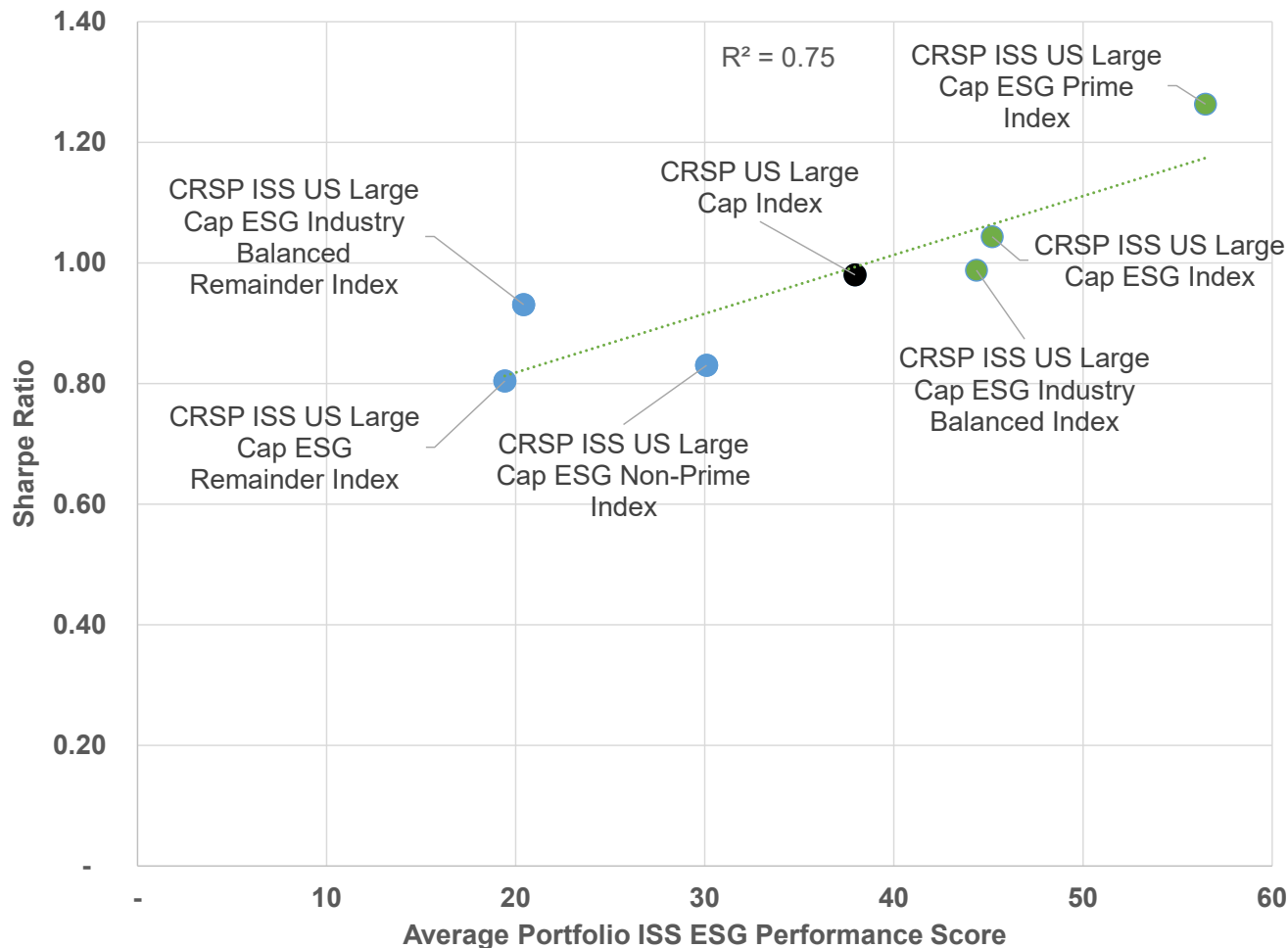


Note: Data for period 1/1/2015 – 8/31/2021; total returns are used in computations

To see the relationship between indexes’ risk/return profile and the ISS ESG Performance Score, we chart portfolios’ Sharpe Ratio vs. the Average Portfolio ISS ESG Performance Score. Portfolio ISS ESG Performance Score is computed by weighting constituents’ ISS ESG Performance Scores by the corresponding weight in the index. Once the portfolio’s ISS ESG Performance Score is computed for a point in time, it is then averaged over analysis time period, January 2015 through August 2021.

As can be seen from Chart 8, there is a relatively strong correlation ( $R^2=0.75$ ) between Sharpe ratio and ISS ESG Performance Score. Just as in the Chart 7, we see that CRSP ISS ESG Indexes have higher Sharpe Ratio than CRSP US Large Cap, indicating that companies with higher ISS ESG Performance Score positively contribute to the risk/return profile of the indexes over the analysis period. At the same time, the Remainder indexes Sharpe ratio is lower, indicating that companies with relatively lower ISS ESG Performance Score contribute negatively to the risk/return profile of the CRSP US Large Cap index over the analysis period.

**Chart 8 – Sharpe Ratio vs. Average Portfolio ISS ESG Performance Score**



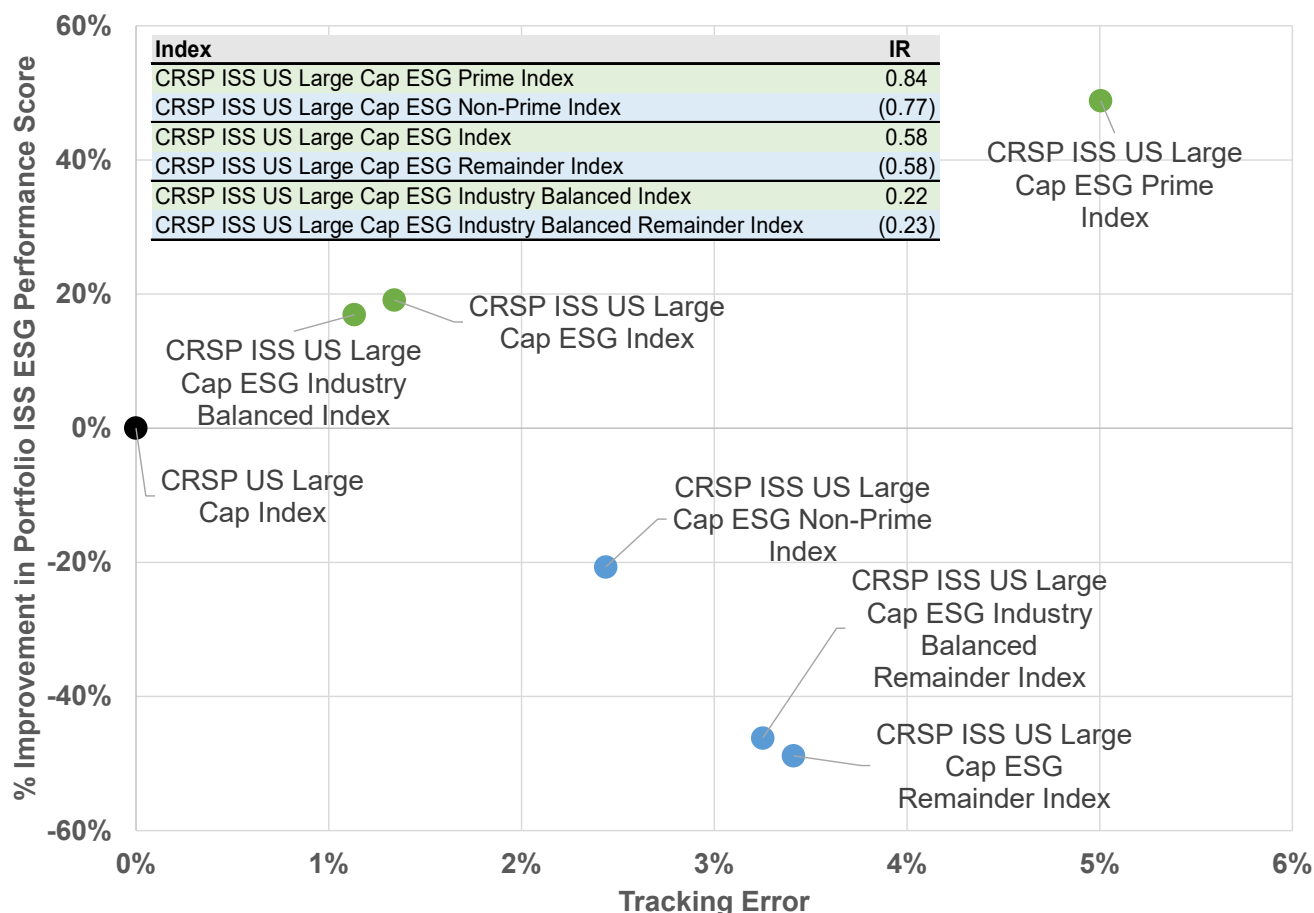
Note: Data for period 1/1/2015 – 8/31/2021; Average Portfolio ISS ESG Performance Score is the average of Portfolio ISS ESG Performance Score for each index over the entire analysis period; Portfolio ISS ESG Performance Score is a weighted score for the entire portfolio, weighting companies' ISS ESG Performance Score by their weight in the index

While we examined the behavior of the CRSP ISS ESG family of indexes from risk-return perspective, there is another consideration that could be important for some investors – tracking error. As CRSP ISS ESG indexes improve their ESG characteristics relative to CRSP US Large Cap by excluding securities with ISS ESG Performance Score below a certain threshold, their performance will also deviate from CRSP US Large Cap. As such, for an investor whose goal was to invest in companies with higher ISS ESG Performance Score, but track the CRSP US Large Cap, the tracking error represents the cost of improving ESG exposure.

As expected, Chart 9 shows that CRSP ISS ESG Industry Balanced index has the lowest tracking error, roughly 1%, while offering approximately 20% improvement in Portfolio ISS ESG Performance Score. It is also unsurprising, that CRSP ISS ESG Prime has the highest tracking error, approximately 5%. However it also has the highest improvement in ESG score – almost 50% over CRSP US Large Cap. While CRSP ISS ESG Index doesn't offer significantly higher improvement in ESG score than CRSP ISS ESG Industry Balanced Index, its higher tracking error enables it to earn higher return, resulting in better Information Ratio of 0.58 over the analysis period.



**Chart 9 – ISS ESG Performance Score Change vs. Tracking Error Relative to CRSP US Large Cap Index**



Note: Data for period 1/1/2015 through 8/31/2021; total returns are used in computation; percent improvement in Portfolio ISS ESG Performance Score is computed relative to CRSP US Large Cap Index using Average Portfolio ISS ESG Performance Score over the analysis period

### Factor Decomposition

We conducted factor analysis to see if the returns could be explained by the commonly used risk factors. We used the five Fama-French factors to understand the returns series. While there are multiple factor definitions, we chose the Fama-French 5-factor model for this analysis because these factors are well defined and studied, both within academia and among practitioners.

We ran the robust regression using monthly returns for the period since 1/1/2015 through 8/31/2021.<sup>14</sup>:

$$CRSP\ ISS\ ESG\ Index\ Returns = \alpha + \beta_{MKT}MKT + \beta_{SMB}SMB + \beta_{HML}HML + \beta_{RMW}RMW + \beta_{CMA}CMA + \varepsilon$$

<sup>14</sup> Monthly factor return series is taken from [https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)

Factors	Simplified Interpretation <sup>15</sup>	Interpreting Coefficients Sign <sup>15</sup>
Market (MKT)	Impact of broad market on the index returns	A positive coefficient indicates that broad market moves are positively correlated with the index moves
Size (SMB)	Impact associated with capitalization size, i.e. “small cap” risk	A positive coefficient indicates exposure to “small-cap stocks”; negative coefficient indicates exposure to “large-cap” stocks
Value (HML)	Impact associated with “value style”	A positive coefficient may indicate exposure to “value style”; negative coefficient implies exposure to “growth style”
Profitability (RMW)	Impact associated with profitability	A positive coefficient indicates that index returns are positively correlated with profitability; a negative coefficient indicates that index returns are negatively correlated with profitability
Investment (CMA)	Impact associated with investment strategy	A positive coefficient indicates that index returns are positively correlated with conservative investment strategy; a negative coefficient indicates that index returns are correlated with aggressive investment

The results of the regression analysis are in Table 1. We can see that the factors for Size, Value and Profitability are statistically significant at alpha 10%, and help explain the performance of the CRSP ISS ESG Indexes. Table 1 also shows that ESG sibling in each of the sub-families has a positive and statistically significant alpha. Given that portfolios use ESG score without any exclusions, the positive alpha is likely correlated to ISS ESG Performance Score over the analysis period.

**Table 1 – Fama-French 5 Factors for ESG and Remainder Indexes**

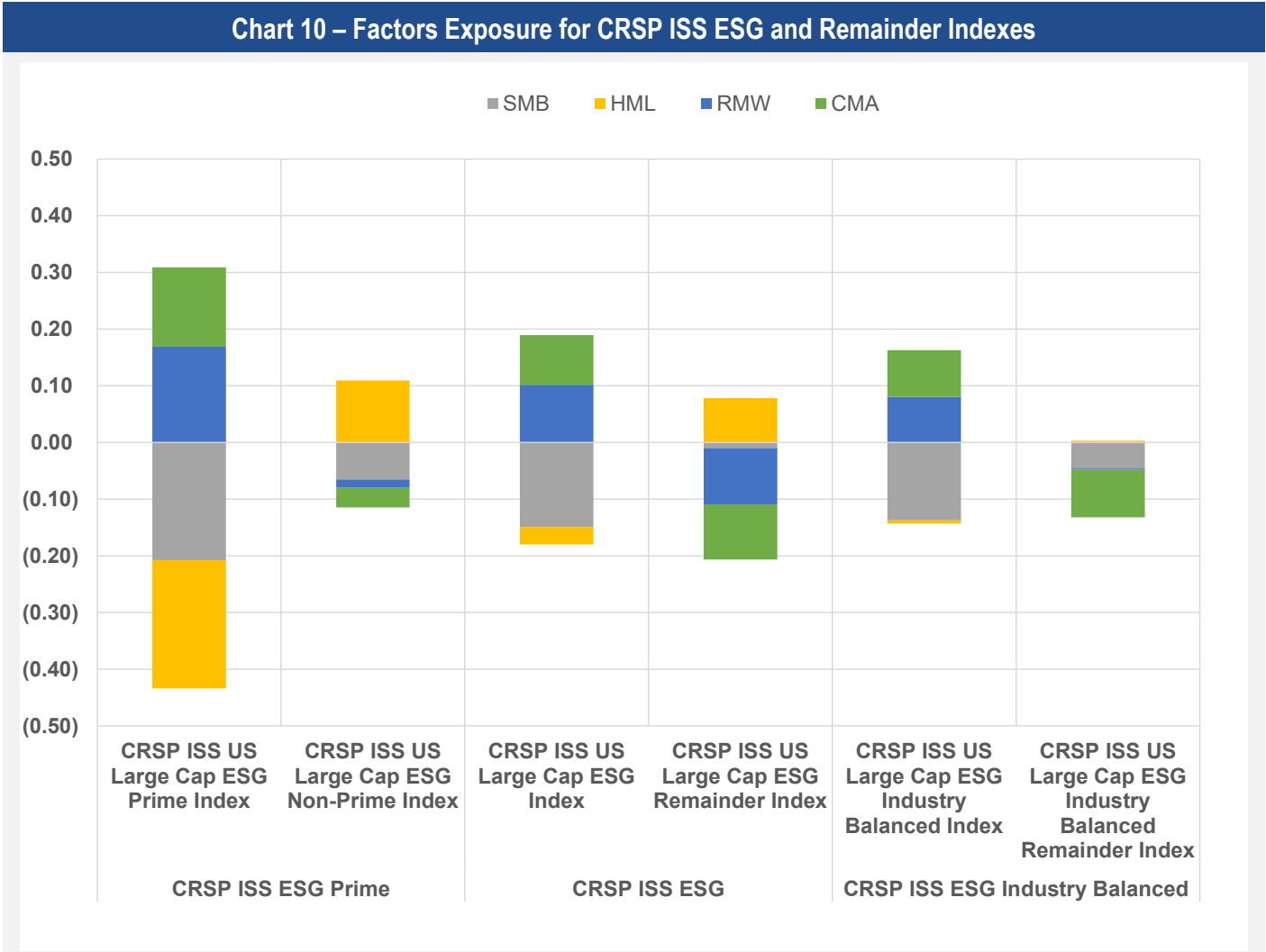
Sub-Family	Index	Intercept	MKT	SMB	HML	RMW	CMA
CRSP ISS ESG Prime	CRSP ISS US Large Cap ESG Prime Index	0.30%	0.95	(0.21)	(0.23)	0.17	0.14
	CRSP ISS US Large Cap ESG Non-Prime Index	-0.02%	1.00	(0.07)	0.11	(0.01)	(0.03)
CRSP ISS ESG	CRSP ISS US Large Cap ESG Index	0.12%	0.98	(0.15)	(0.03)	0.10	0.09
	CRSP ISS US Large Cap ESG Remainder Index	-0.05%	1.02	(0.01)	0.08	(0.10)	(0.10)
CRSP ISS ESG Industry Balanced	CRSP ISS US Large Cap ESG Industry Balanced Index	0.09%	1.01	(0.14)	(0.01)	0.08	0.08
	CRSP ISS US Large Cap ESG Industry Balanced Remainder Index	0.02%	0.95	(0.05)	0.00	(0.00)	(0.08)

Note: Data for period 1/1/2015 – 8/31/2021; monthly total returns are used in robust regression; green indicates coefficients statistically significant at alpha 10%

<sup>15</sup> We use quotes for certain terms, such as “value style”, “small-cap stocks”, because those terms are not universally defined, and are dependent on factor constructions

Chart 10 helps visualize the differences in factor exposure between CRSP ISS ESG and Remainder (Non-Qualifying) indexes. Chart 10 shows that one of the key differences driving the returns in the case of all ESG indexes is the exposure to Size, Growth and Profitability factors.

Furthermore, the chart also highlights the differences in factor exposure between sub-families. As an example, CRSP ISS ESG Prime Index has a significant exposure to growth, while CRSP ISS ESG Industry Balanced does not. This information, along with other metrics, should help investor to better understand the trade-offs offered by the three different methodologies.



Note: Data for period 1/1/2015 – 8/31/2021; excludes MKT factor exposure

## V. CONCLUSION

There appears to be evidence that the outperformance noted in the CRSP ISS ESG siblings within each of the three sub-families cannot be entirely explained with the risk factors during the backtest period. Since CRSP ISS ESG indexes have been designed without using exclusions, relying completely on the ESG score from an independent third party provider, ISS, the noted outperformance, once controlling for known risk factors, is most likely connected to the ISS ESG Performance Score.

However, given the limited time period, and the emerging academic research, investors should be cautious in extrapolating the historical performance into the future. As noted throughout the paper, more research using transparent data and methodology is needed in the area of ESG investing.

Regardless of potential outperformance, the three CRSP ISS ESG sub-families of indexes offer distinct investment options to the investors interested in incorporating ESG into portfolio construction. The three sub-families have different risk/return, sector concentrations, and tracking error relative to the CRSP US Large Cap.

Therefore, an investor may choose to focus on

- CRSP ISS ESG Prime Index – the index offering the most improvement in the Portfolio ESG Score over CRSP US Large Cap
- CRSP ISS ESG Industry Balanced Index – the index that has the lowest tracking error relative to CRSP US Large Cap while offering a meaningful Portfolio ESG Score improvement
- CRSP ISS ESG Index – the index offering a balance of differentiated risk/return profile and improved Portfolio ESG Score, while still maintaining low tracking error to CRSP US Large Cap

Furthermore, by offering the Remainder indexes for each of the sub-families, i.e. indexes with the companies that were not included in ESG sibling, this new suite of ESG products should offer the transparency to the investors wishing to incorporate ESG into their investments.

Given the complexities of ESG Investing, the transparent CRSP ISS ESG indexes should offer a worthwhile tool for benchmarking or investing.

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Established CRSP in 1960

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