

INTRODUCING THE ICE ESG BOND INDEX FAMILY

Phil Galdi, Head of Indices
ICE Data Services | ICE Data Indices

David Shen, Senior Director
ICE Data Services | ICE Data Indices

ICE Index Hotline:
New York: +770 999 4501
London: +44 203 948 6501 Email:
ICEIndices@theice.com

Introducing the ESG Bond Index Family

In response to growing demand for fixed income benchmarks that take account of Environmental, Social and Governance (“ESG”) criteria, ICE Data Indices, LLC (IDI) has launched a new ESG Bond Index Family (“ESG Family”).

Corporate ESG Indices leverage Sustainalytics ratings

The Corporate ESG Index series of indices (“the Corporate ESG Indices”) filter out securities of companies with certain business involvement and are tilted toward those companies with lower (better) ESG risk scores using one of three methodologies that are currently made available by IDI: ESG Tilt; ESG Tilt with duration match; ESG Best-in-Class. The information used to compile the Corporate ESG Indices is based, in part, on Sustainalytics ESG risk ratings.

Carbon reduction indices closely track their cap-weighted Parents

Global Government Carbon Reduction Indices tilt country weights in order to lower the weighted average carbon footprint of the overall index while minimizing the tracking error versus the starting capitalization-weighted Parent Index.

Able to create customized ESG benchmarks

IDI intends to grow the initial set of ESG indices as additional versions are developed based off other Parent Indices and using additional ESG methodologies. IDI also continues to publish the ICE BofA Green Bond Index (GREN), which was originally launched October 2014 with history going back to December 31, 2010. In addition, IDI can construct custom ESG indices that are tailored to an investor’s requirements.

Introducing the ICE ESG bond index family

Overview

ICE Data Indices, LLC has launched a new family of bond indices that take account of Environmental, Social and Governance criteria.

In response to growing demand for fixed income benchmarks that take account of Environmental, Social and Governance (“ESG”) criteria, ICE Data Indices, LLC (IDI) has launched a new ESG Bond Index Family (“ESG Family”). The initial set of indices in the ESG family are modified versions of standard IDI bond indices (“Parent Indices”) that fall into two categories:

- **Corporate ESG Indices:** indices that filter out securities of companies with certain business involvement and tilted toward those with lower (better) ESG risk scores. These indices employ one of three methodologies that are currently made available by IDI:
 - **ESG tilt:** filter out companies with significant involvement in controversial weapons and tilt the weights of remaining constituents towards those with better (lower) ESG Risk Scores and away from those with worse (higher) ESG Risk Scores.
 - **ESG tilt with duration match:** the same as the ESG tilt method but with additional weighting adjustments to match the Parent Index interest rate exposure across rating and sector segments as closely as possible.
 - **ESG best-in-class:** filter out companies with significant involvement in controversial weapons and/or worse (high) ESG risk scores. The weights of remaining constituents are then adjusted to closely match allocations to rating and sector segments of the Parent Index.
- **Global Government Carbon Reduction Indices:** indices that tilt country weights in order to lower the weighted average carbon footprint of the overall index while minimizing the tracking error versus the starting capitalization-weighted Parent Index.

The initial set of indices includes 12 Corporate ESG indices and 3 Global Government Carbon Reduction Indices (Exhibit A). Additional indices based off other Parent Indices and using additional ESG methodologies are expected to be developed over time. IDI also continues to publish the ICE BofA Green Bond Index (GREN), which was originally launched October 2014 with history going back to December 31, 2010. In addition, IDI can construct custom ESG indices that are tailored to an investor’s requirements.

Exhibit A: indices in the ESG Bond Index Family



Source of ESG data

On top of the data IDI typically uses when compiling bond indices (e.g., reference data, evaluations, credit ratings, etc.), construction of the ESG Family requires additional input data to quantify the ESG parameters of the indices. For the initial set of indices that we have launched, that ESG input data comes from two sources. As we further develop and expand the ESG family, additional sources may be added, as required.

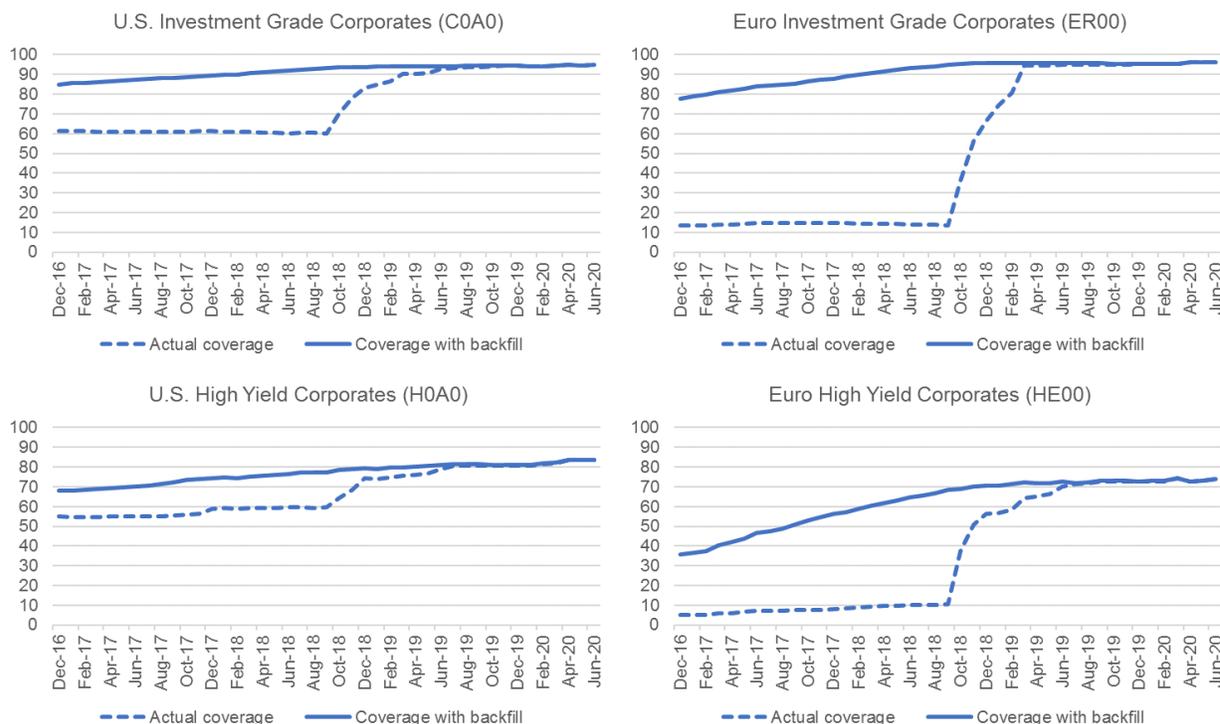
The information used to compile the Corporate ESG Indices is based, in part, on proprietary information published by Sustainalytics (<https://www.sustainalytics.com>). The information used to compile the Global Government Carbon Reduction Indices is based, in part, on CO2 per capita data published by Emissions Database for Global Atmospheric Research (“EDGAR Carbon Data Report”).

Sustainalytics coverage of the high grade indices is currently over 94%, while U.S. and Euro high yield indices are at 84% and 73%, respectively.

A common criterion across all the Corporate ESG indices is that companies in a Parent Index be rated by Sustainalytics for their debt to qualify for inclusion in the ESG indices built off that Parent. Currently, coverage of the U.S. and Euro investment grade indices (C0A0 and ER00) are both over 94%, while the U.S. high yield index is at 84% and the Euro high yield index is at 73%. However, ESG ratings are a relatively new metric and coverage for the indices was not as high in prior years.

On a going forward basis, when the indices are rebalanced the most recently updated ESG risk scores are used for each company in the index, and if a company has not been rated it is excluded from the index. However, in order to maintain a satisfactory level of diversification in the ESG indices during backtest periods, we retroactively applied the earliest available score to periods prior to a company being rated. For example, if a company was first rated in January 2018, we used that earliest score for 2017 as well. Backward application of scores for more recently rated companies allows us to get the coverage of even the Euro high yield index to a meaningful level, starting at 36% of the Parent Euro High Yield Index at the beginning of 2017 and growing to over 73% currently.

Exhibit B: Sustainalytics coverage of Parent Indices



Corporate ESG Indices

The construction of the Corporate ESG Indices begins with a standard Corporate index, which we refer to as the Parent Index. Each constituent in the Parent Index is mapped to the corresponding company in the Sustainalytics dataset. Sustainalytics provides a rating for a corporate entity, IDI identifies the ultimate parent of that corporate entity, then maps the Sustainalytics rating to each of its debt-issuing affiliates in the Parent Index. Any constituent in the Parent Index that cannot be mapped to the Sustainalytics dataset is removed. Having mapped Parent Index constituents to Sustainalytics data and removed non-rated constituents, the ESG Corporate Indices are constructed using one of three methodologies currently made available by IDI as described below: ESG Tilt; ESG Tilt with Duration Match; ESG Best-in-Class. Detailed methodologies are provided in Appendix A. Additional methods are expected to be made available over time.

The ESG Tilt Method

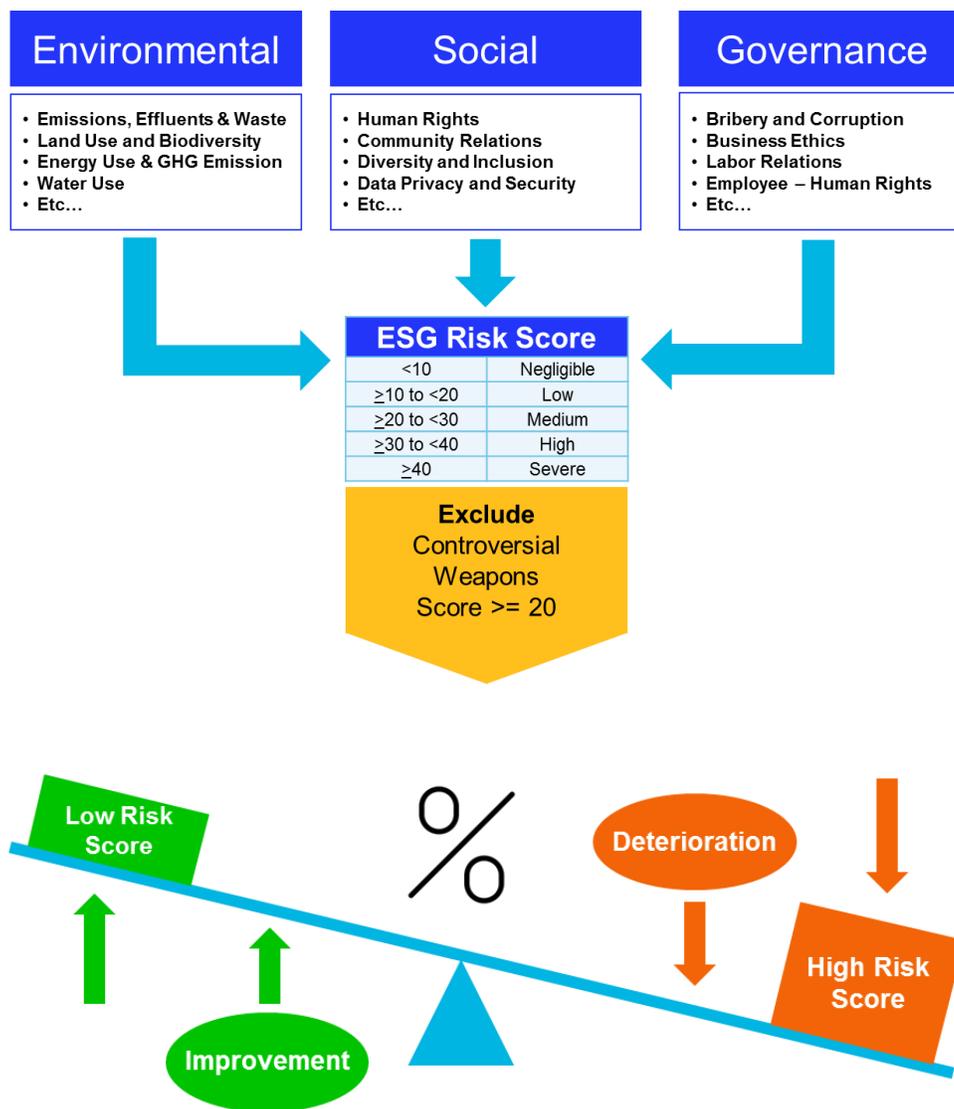
The Sustainalytics ESG rating data includes a set of metrics for each company that quantify exposures to detailed sets of factors that are classified under the Environmental, Social and Governance pillars. Those factors are presented as a series of risk scores, which are then combined to provide an overall ESG Risk Score ranging from 1 to 100. The higher the risk score, the greater the risk.

One of the individual factors is exposure to controversial weapons. Constituent debt of any company with a medium to severe involvement with controversial weapons (i.e., a controversial weapons score greater than or equal to 20) is excluded from the index.

The last step is to determine weightings of the remaining constituents. The starting point for a bond's weight in an ESG Corporate Index is its corresponding weight in the Parent Index. That weight is then adjusted to increase the weights of those constituents with ESG risk scores less than 20, while decreasing the weights of

those with ESG risk scores greater than or equal to 30. In addition, the adjustment factor for a given bond is further modified to over weight securities with improving ESG risk scores (based on year over year changes), while under weighting those with deteriorating scores. After all the adjustments are applied, the weights of all constituents are normalized to total 100.

Exhibit C: Overview of the ESG tilt method

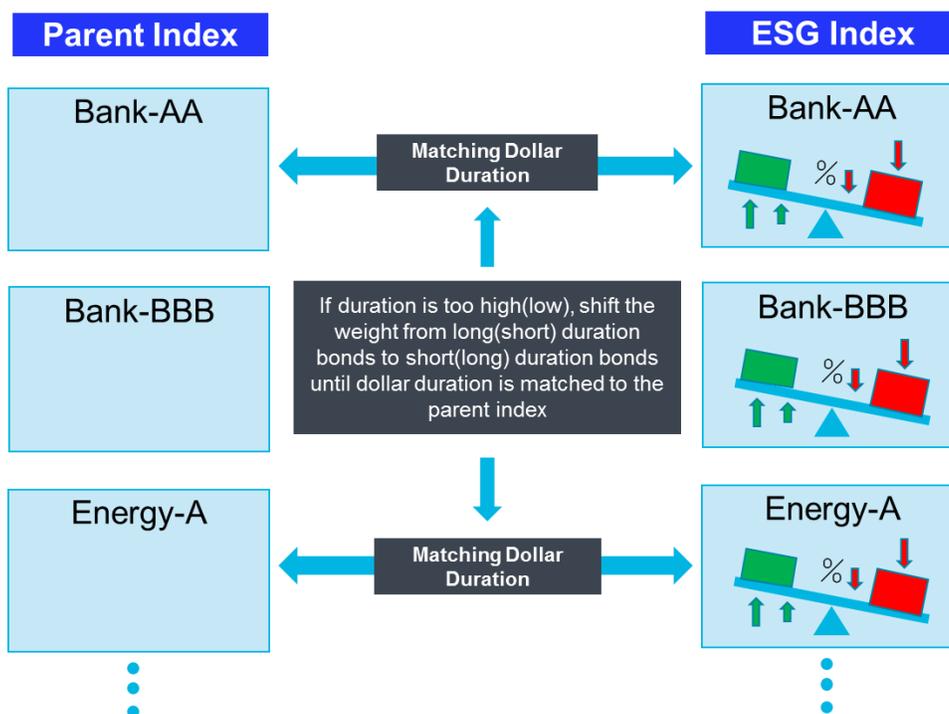


ESG Tilt with Duration Match Method

In addition to overweighting securities with low/improving ESG risk scores and underweighting those with high/deteriorating scores, as is done with the ESG tilt method, the ESG tilt with duration match method adds an additional parameter that attempts to closely match the interest rate exposure of the Parent Index across rating/sector segments. The process begins the same as the ESG Tilt method, with the debt of companies having controversial weapons scores greater than 20 removed from the index and the weights of the remaining constituents adjusted based on their overall ESG scores. But then the ESG tilt with duration-match method continues where the ESG tilt method leaves off.

Having applied the controversial weapons filter and tilted the weights of the remaining constituents based on their ESG risk score buckets, the constituents are then grouped into rating/sector segments (e.g., BBB1-BBB3 Capital Goods, A1-A3 Telecom, etc.). The dollar duration (i.e., effective duration times percentage share of the index) of each cell in the index is then compared to the dollar duration of the corresponding segment in the Parent Index and further weighting adjustments are applied to match them as closely as possible subject to certain caps/floors based on the constituent's ESG risk score. The result is an index that improves on the ESG characteristics of the Parent Index while staying relatively close to its exposure to other interest rate and credit factor exposures associated with bonds.

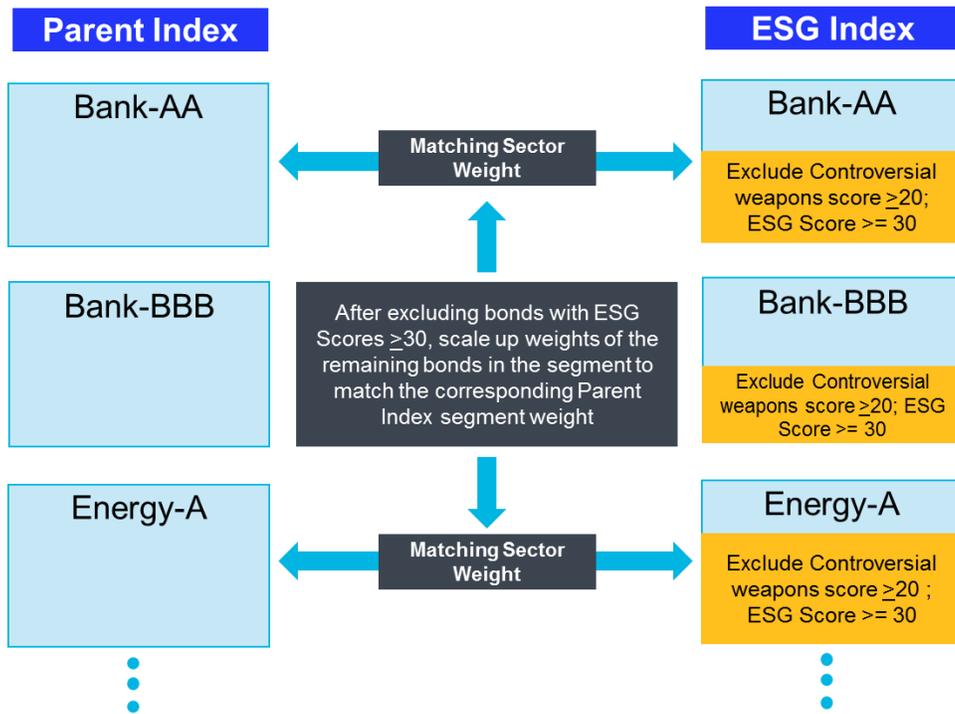
Exhibit D: Overview of the ESG tilt with duration-match method



ESG Best-in-Class Method

As with the other two methods, the ESG Best-in-Class method begins by removing Parent Index debt of companies having controversial weapons scores greater than 20. But, unlike the other two methods, it does not tilt the weightings of the remaining bonds based on their overall ESG risk scores. Instead, it simply removes the debt of any company with a high or severe ESG risk score (i.e., ≥ 30). Finally, as with the ESG tilt with duration-match method, the Best-in-Class Index is grouped into rating/sector segments. But rather than match the dollar durations of each segment to the Parent Index, the Best-in-Class method simply matches their percentage allocations. Each of the bond weights within a segment are then adjusted on a pro-rata basis.

Exhibit E: Overview of the ESG tilt with duration-match method



Corporate ESG Index results

The volatility in the corporate bond markets in 2020 has provided a good opportunity to see how the ESG indices perform relative to their Parents.

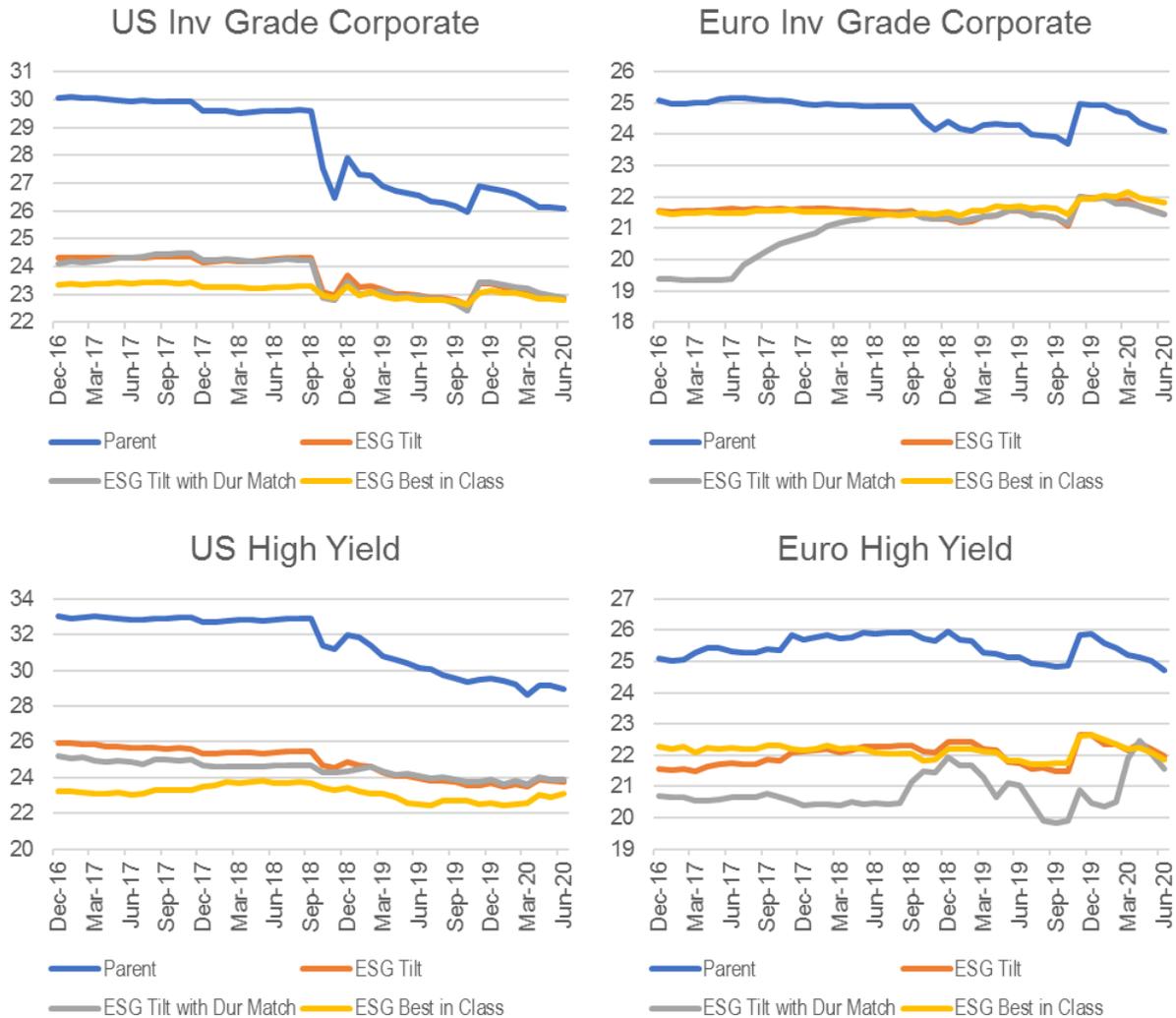
Given the limited ESG coverage of index constituencies in earlier years, we set the inception dates for each of the indices at December 31, 2016 which means we now have 3½ years of backtested results. That limits our ability to observe the indices through a wide variety of economic cycles and would normally be considered too little history on which to draw any meaningful observations. However, that short observation window includes one of the most volatile periods in the history of corporate bond indices. And for that reason, these backtests contain significant information content.

As expected, the ESG Indices achieve significant reductions in ESG risk scores...

Summary results and ESG risk scores for each Parent Index and their respective ESG Index variants are presented in Exhibit F. As expected, in each case the ESG indices have lower ESG risk scores than their Parent Indices. The most significant improvements are in the US High Yield indices, which have ESG risk scores that are more than 20% below the Parent Index. The other ESG indices have ESG risk scores that are 13% to 18% below their Parents.

Over the course of the backtest period, it is often the Best-in-Class index that has the lowest ESG risk score of the three variants for a given Parent Index. However, the ESG Tilt with duration match version produced the lowest ESG risk score in the early years of the euro investment grade indices, and it produced the lowest score for most of the Euro high yield history. That is attributed to the fact that lower ESG rating coverage in those markets resulted in larger initial duration differentials versus the two Euro Parent Indices. That led to additional weighting adjustments that replaced long/short duration bonds with high ESG risk scores with short/long duration bonds with low ESG risk scores, further reducing the overall ESG risk score.

Exhibit F: ESG vs Parent Index ESG risk scores



...and they have outperformed their Parent Indices over the last 3½ years.

In addition to improving on the ESG risk scores, in each case the ESG indices also had better total return performances than their Parents over the last 3½ years (Exhibit G). Since they both have constraints that, to varying degrees, seek to match certain risk targets of the Parent Index, it makes sense that the ESG tilt with

duration match and Best-in-Class methods should have returns that are, in most cases, closer to the Parent Indices than the ESG tilt method. However, they too outperformed by meaningful amounts over that period, particularly in high yield where the two Best-in-Class indices have annualized returns that are more than half a percent higher than their Parent Indices.

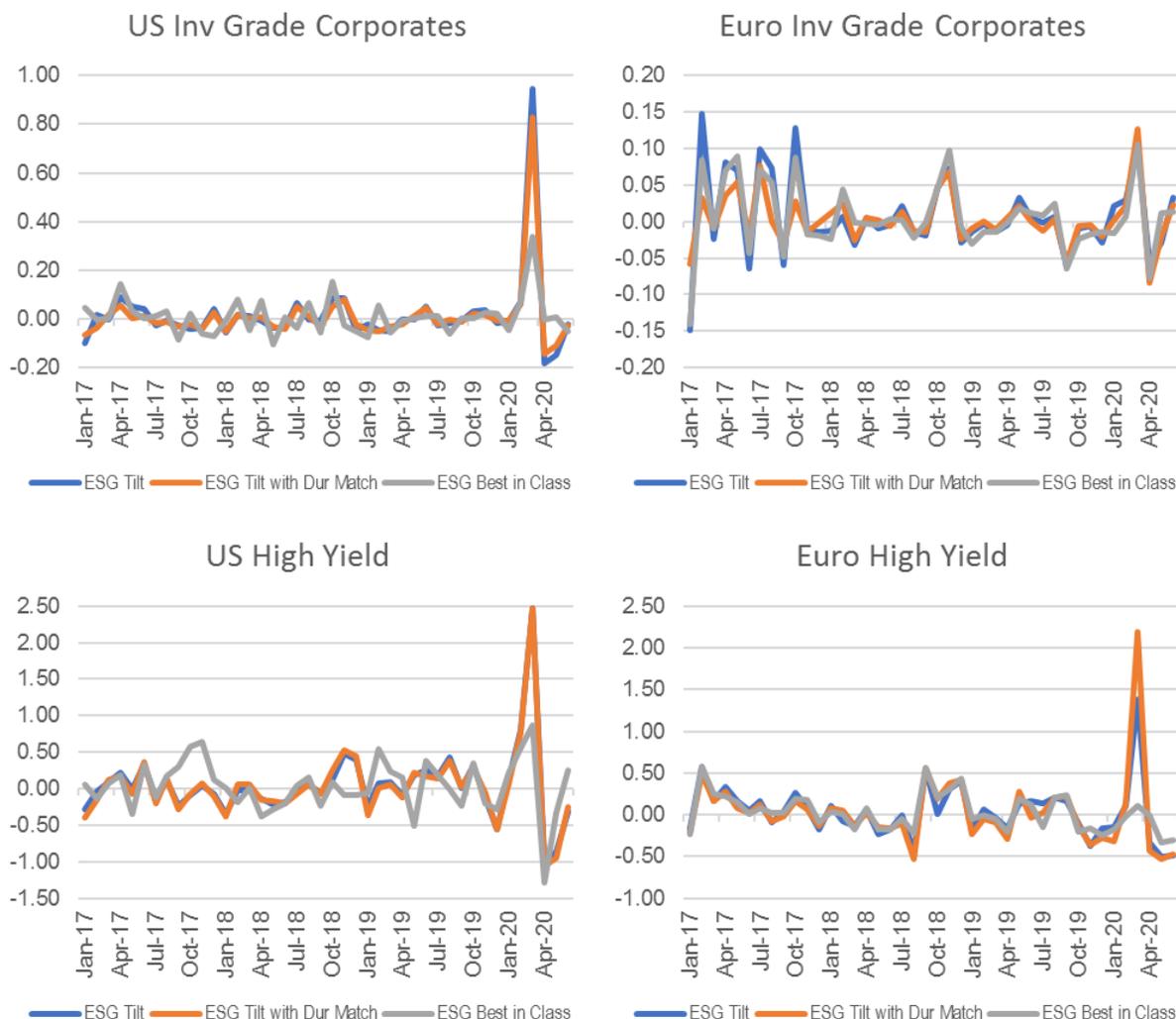
Exhibit G: Corporate ESG index results (12/31/2016 – 6/30/2020)

Market	Ticker	Type	Annualized Total Return	Avg monthly tracking error	Avg 12-month difference	Max 12-month difference	Min 12-month difference	Avg ESG Score
USD IG	COA0	Parent	6.50					28.37
USD IG	C0SG	ESG Tilt	6.73	0.06	0.12	1.17	-0.20	23.70
USD IG	C0SD	ESG Tilt w/ dur match	6.66	0.05	0.07	1.03	-0.19	23.66
USD IG	C0OS	Best-in-Class	6.62	0.05	0.01	0.45	-0.22	23.13
USD HY	H0A0	Parent	3.93					31.52
USD HY	H0SG	ESG Tilt	4.56	0.28	0.62	4.08	-1.36	24.82
USD HY	H0SD	ESG Tilt w/ dur match	4.39	0.30	0.55	3.85	-1.24	24.45
USD HY	H0OS	Best-in-Class	4.43	0.27	0.57	1.99	-1.26	23.14
EUR IG	ER00	Parent	1.74					24.68
EUR IG	ERSG	ESG Tilt	1.83	0.04	0.07	0.42	-0.11	21.56
EUR IG	ERSE	ESG Tilt w/ dur match	1.79	0.02	0.04	0.17	-0.10	20.95
EUR IG	EROS	Best-in-Class	1.81	0.04	0.07	0.30	-0.13	21.61
EUR HY	HE00	Parent	2.42					25.44
EUR HY	HESG	ESG Tilt	2.96	0.23	0.47	1.79	-0.71	22.02
EUR HY	HESD	ESG Tilt w/ dur match	2.93	0.26	0.35	1.78	-0.89	20.82
EUR HY	HEOS	Best-in-Class	2.77	0.17	0.47	1.74	-1.00	22.14

The investment grade indices generally stayed within +/-0.15% of their Parent Index monthly returns, while high yield was mostly within +/-0.50%.

For most of the backtest period the six investment grade ESG indices stayed within +/-0.15% of their respective Parent Indices, while the six high yield ESG indices were mostly within about half a percent of their Parent Indices (Exhibit H). But as the full force of the pandemic crisis hit the corporate bond markets in March 2020 the ESG indices veered far away from the returns of their Parent Indices. The one exception was in the Euro investment grade corporate market where the ESG indices each stayed within 0.15% of their Parent Index. It is also noteworthy that in the other three markets, while all three methods saw large divergences in the performance relative to their Parent Indices, the magnitude of the variances was significantly lower for the Best-in-Class indices than it was for their corresponding ESG Tilt and ESG Tilt with Duration Matched counterparts.

Exhibit H: ESG index monthly total return comparisons vs Parent Indices



A lower exposure to Energy was the source of outperformance in the ESG Tilt and ESG Tilt with duration-match indices.

To better understand the source of the large performance variances for certain of the ESG indices in recent months we can examine the US high grade Corporate series in more detail. The ESG Tilt with duration match has exactly matched the US Corporate Index effective duration throughout its history. The other two indices have deviated by as much as a third of a year, but on February 29, 2020 the ESG Tilt index was within a tenth of a year and the Best-in-Class index was within a quarter year of the Parent Index, so the differences in interest rate exposures were not extreme (Exhibit I). However, the ESG Tilt and ESG Tilt with duration match indices each had 5.25% less exposure to the Energy sector, while the Best-in-Class index, in accordance with its methodology, exactly matches sector exposures (Exhibit J). That really made a difference in March as the Energy sector of the Parent Index lost 17.13%, or almost 11% more than the rest of the index. As a result, the ESG Tilt and ESG Tilt with duration match indices outperformed by wide margins. Meanwhile, Energy was not as large a factor in the Euro high grade indices as the underweighting was much less pronounced.

Exhibit I: US high grade Corporate ESG index effective durations vs Parent Index

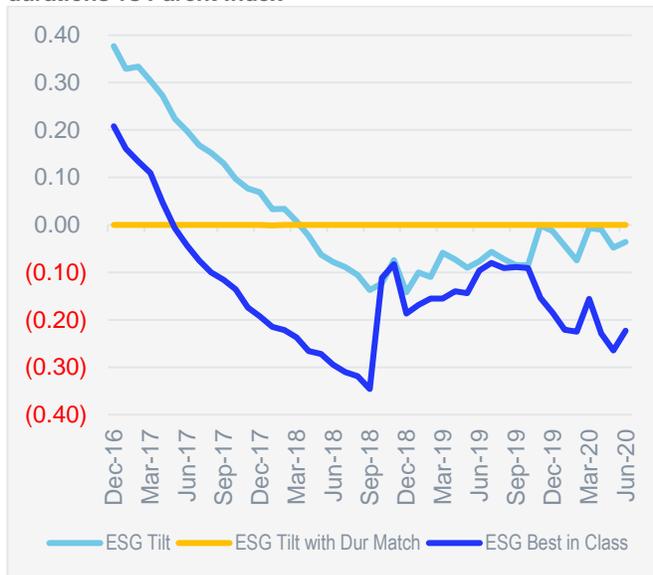


Exhibit J: US high grade Corporate ESG index Energy allocations vs Parent Index



The ESG Tilt and ESG duration match indices tend to overweight the Technology, Telecom, Real Estate and Media sectors the most.

For a given Parent Index, the EST Tilt and ESG Tilt with duration match indices have similar sector allocation (Exhibits K and L). Though the order may vary index to index, relative to their Parent Indices they tend to overweight the Technology, Telecom, Real Estate and Media sectors the most. Not surprisingly, Energy is the most underweight in most of the ESG indices. The only exceptions are Euro Investment Grade, where Energy is the second most underweighted sector behind Banking for both indices, and Euro High Yield, where Energy is the second most underweighted sector behind Basic Industry for the ESG Tilt with duration match index. In line with their methodologies, the Best-in-Class index sector allocations exactly match those of their Parent Indices (though that is not the case in the early years of the backtest). Rating distribution variances versus Parent Index allocations tend to be smaller for the investment grade indices than for high yield. However, in both cases the bias is toward lower rated credits (Exhibit M).

Exhibit K: ESG investment grade sector allocation vs Parent Indices (as of 6/30/2020)

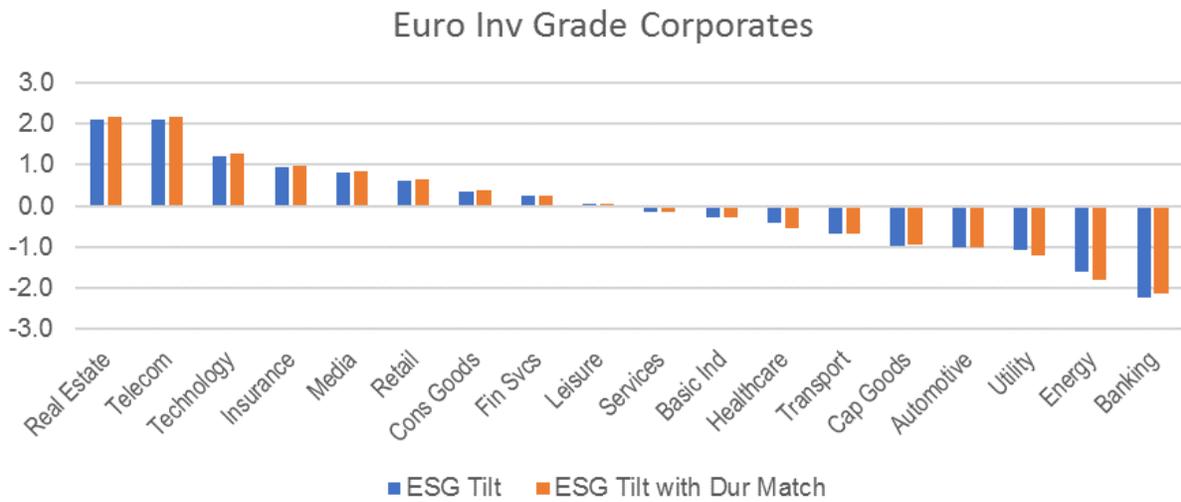
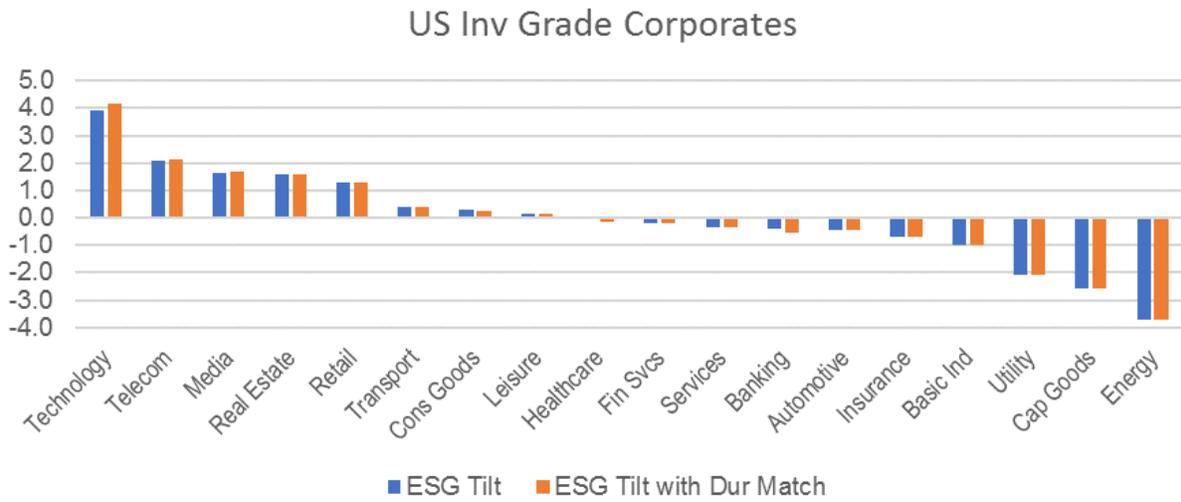


Exhibit L: ESG high yield index sector allocations vs Parent Indices (as of 6/30/2020)

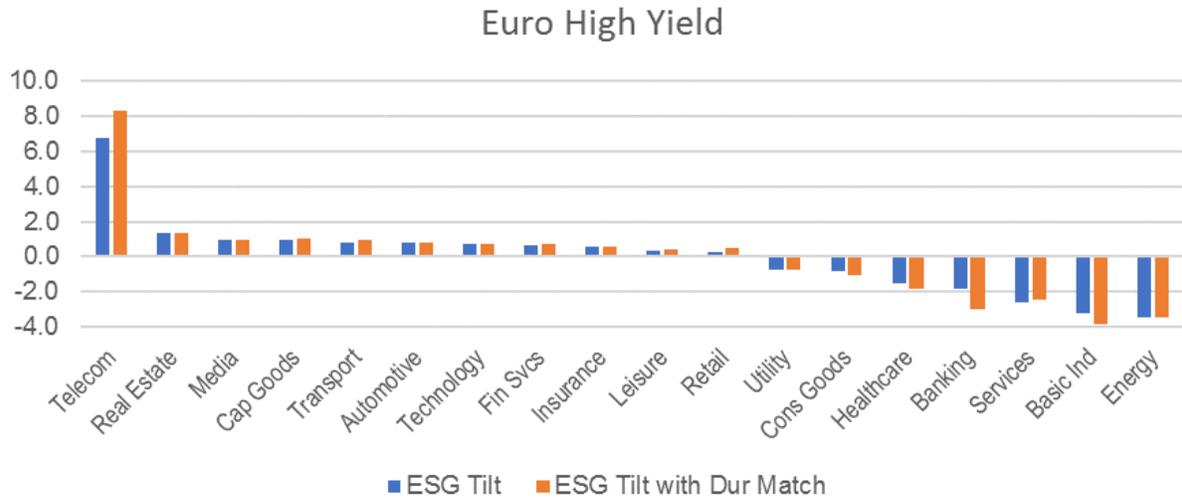
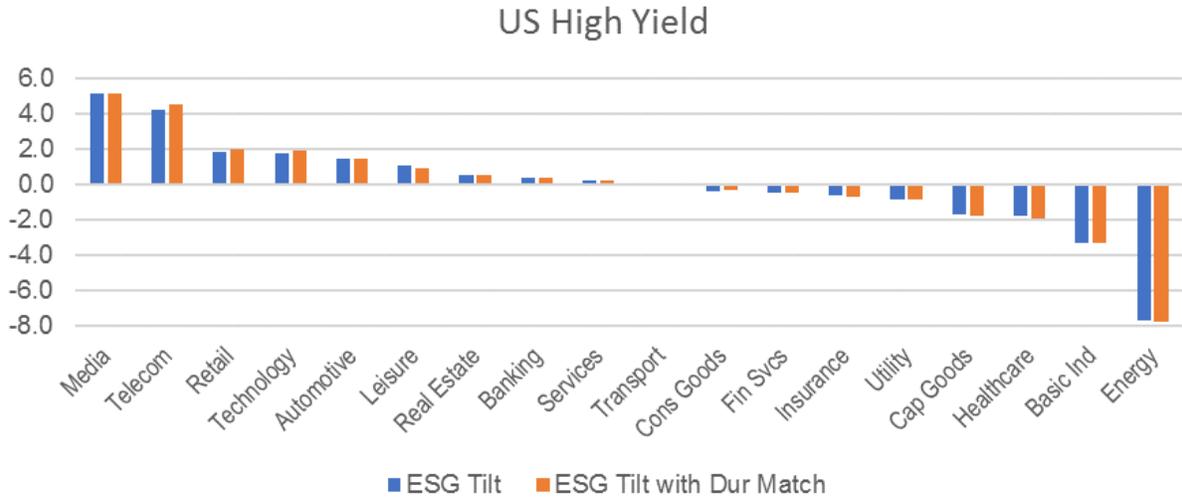
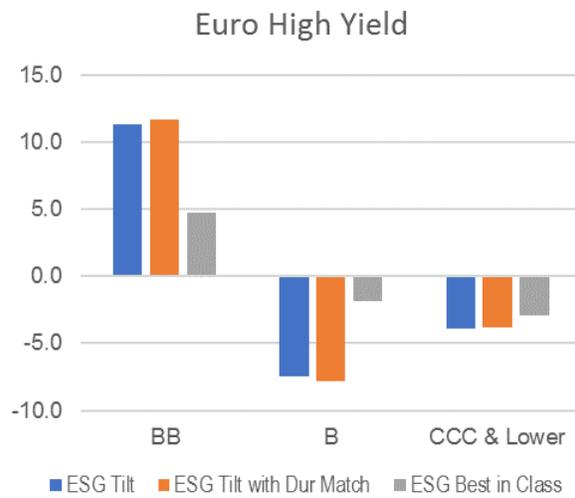
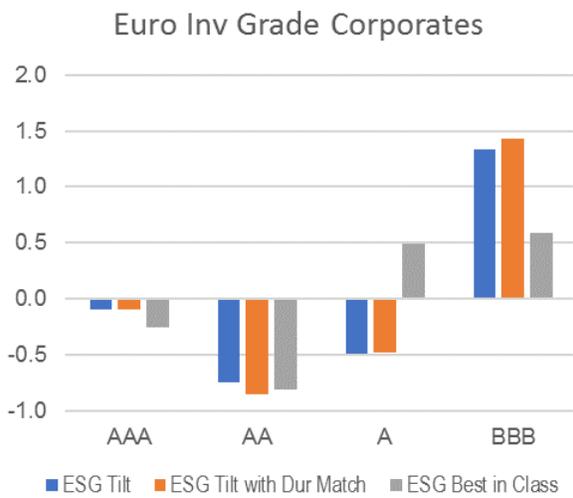
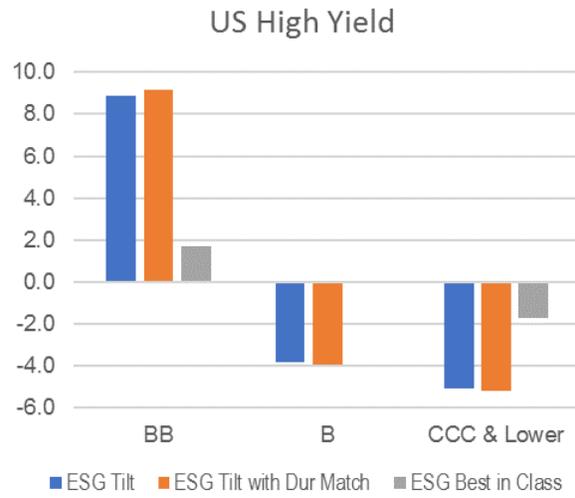
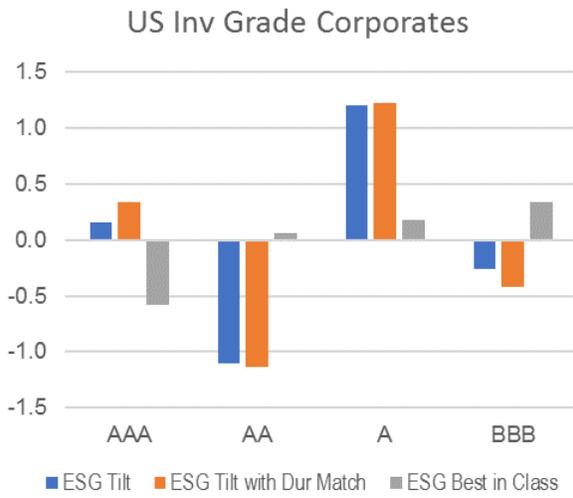


Exhibit M: ESG index rating allocations vs Parent Indices (as of 6/30/2020)



Global Government Carbon Reduction Indices

The Global Government Carbon Reduction Indices start with the constituents of a standard, market-capitalization weighted index (the “Parent Index”) and adjust constituent weightings in order to lower the weighted average fossil carbon emissions of the countries in the index. The adjusted constituent weights are determined using an optimization process that minimizes the estimated tracking error of the Carbon Reduction Index versus its Parent Index while reducing the carbon footprint of the Index subject to certain additional constraints. The constraints are intended to ensure that the index risk profile does not deviate significantly from the Parent Index.

The CO₂ per capita data is based on the dataset published by Emissions Database for Global Atmospheric Research (“EDGAR Carbon Data Report”). The data is refreshed annually in December, with the new data used at the year-end rebalancing for the January constituency. The Index is not allowed to hold securities of a country for which CO₂ per capita data is not reported in the most recently updated dataset published by the EDGAR Carbon Data Report. Of the indices constructed to date, all Parent Indices constituent countries have been included in the EDGAR Carbon Data Report for the full backtest period.

Carbon Reduction Index rebalancing parameters

Optimization Objective: minimize estimated tracking error versus Parent Index

Optimization Constraints:

- Bond weights: the maximum weight for each security is 500% of its weight in the Parent Index; the minimum weight for each security is 20% of its weight in the Parent Index.
- The Index effective duration must be within +/-0.25 of the Parent Index
- Each Index currency segment contribution to the Index effective duration (i.e., currency segment effective duration times currency weight) must be within +/- 0.25 of that of the corresponding currency segment of the Parent Index.
- Each Index currency segment contribution to the overall Index key-rate duration must be within +/-0.50 of that of the Parent Index
- Index carbon metric: initially set to a 20% target reduction relative to the Parent Index. If the target cannot be met, it is gradually relaxed until a solution is achieved.

Certain carbon reduction indices may include additional constraints. For example, for broad global indices the DV01 currency constraint serves to control country exposures. However, for the ICE Euro Government Carbon Reduction Index, which is a single currency index, an additional 50% cap on individual country exposures has been added.

Global Government Carbon Reduction Index results

The United States has seen a 21% reduction in its CO₂ per capita over the last 20 years. But the average reduction across all countries that have been part of the Global Government Index during that entire period is 22%. And even with its improvement, the United States has the highest average carbon score over the 20-year period and is second highest behind only Australia currently (Exhibit N). Consequently, the United States allocation has been reduced the most relative to the Parent Index (Exhibit O). At the other end of the spectrum, France, which has one of the lowest carbon footprints in the index, and which is highly correlated to the performance of the overall Euro contingent, has seen the largest increase in its allocation relative to its weight in the Parent Index.

Exhibit N: Constituent country CO₂ per capita December 2000 – June 2020
 (Note: only countries included in the index for its full history are shown)

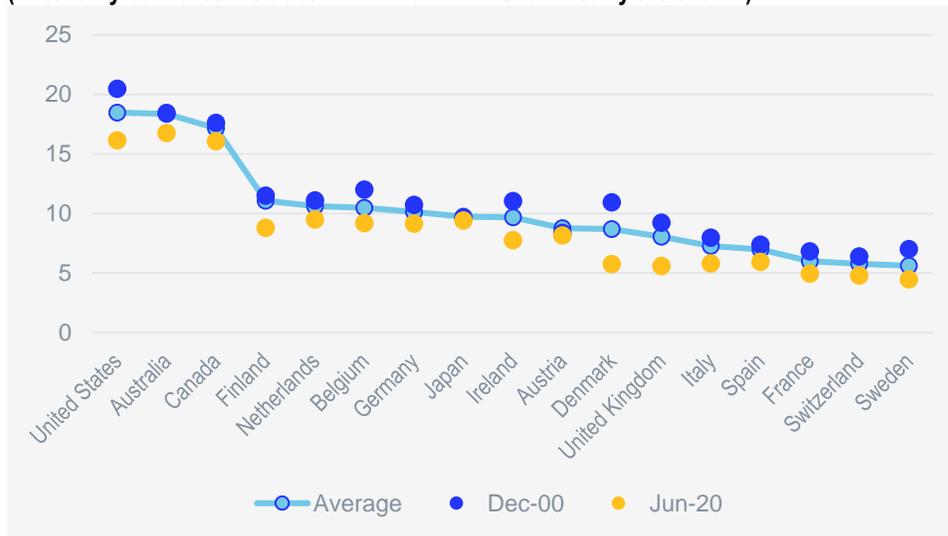
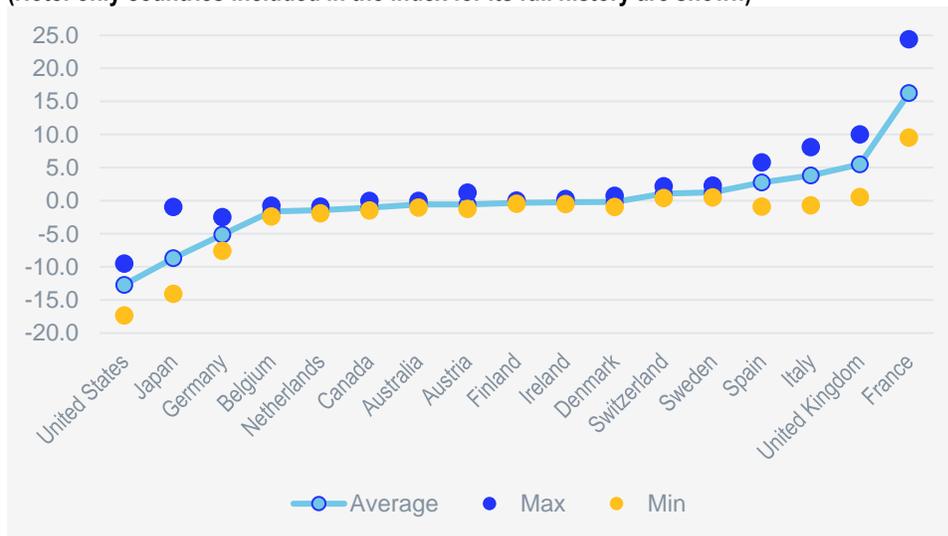


Exhibit O: Global Government Carbon Reduction Index country weights vs Parent Index December 2000 – June 2020
 (Note: only countries included in the index for its full history are shown)



Over the last 20 years the Global and Euro indices slightly outperformed their Parents, while the Global ex-Japan Index has slightly underperformed...

Over their nearly 20-year of backtested histories, the Global and Euro Carbon Reduction Indices have both modestly outperformed their respective Parent Indices, while the Global ex-Japan Carbon Reduction Index has fallen slightly short of its Parent Index. At 4.08%, the Global Government Carbon Reduction Index annualized return since December 31, 2000 is 0.14% higher than its Parent Index and the Euro index is 0.09% ahead of its

Parent Index annualized return. Meanwhile, the Global Government Carbon Reduction Index annualized return since December 31, 2000 is 0.06% shy of its Parent Index.

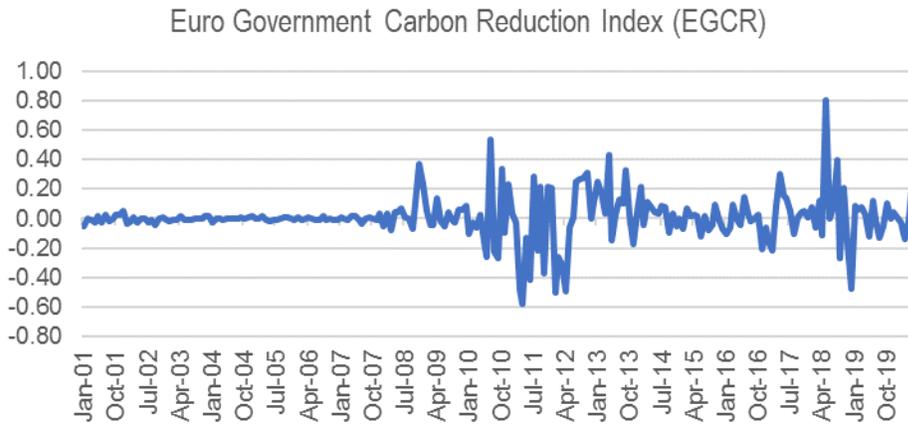
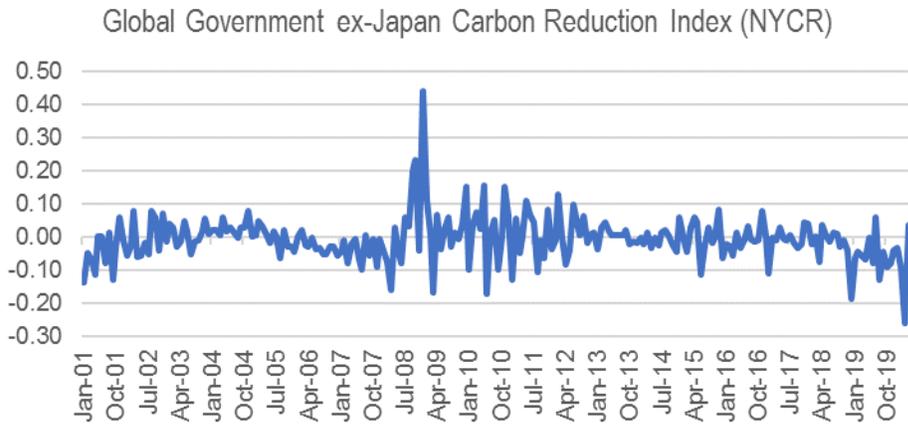
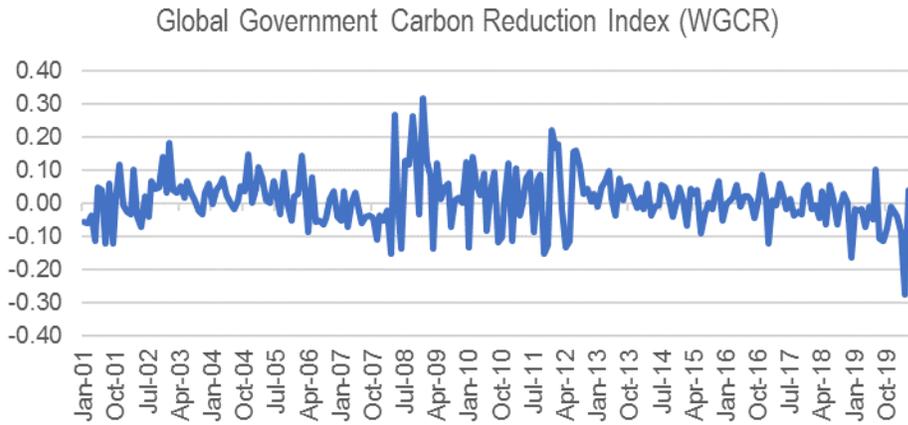
Exhibit P: Global Government Carbon Reduction Index results (12/31/2000 – 6/30/2020)

	Ticker	Parent	Annualized local currency total return			Avg monthly tracking error	Avg carbon reduction %
			CR Index	Parent	Difference		
Global Govt Carbon Reduction Index	WGCR	W0G1	4.08	3.93	0.14	0.06	20.0%
Global Govt ex-Japan Carbon Reduction Index	NYCR	N0Y1	4.72	4.78	-0.06	0.05	20.0%
Euro Govt Carbon Reduction Index	EGCR	EG00	4.82	4.73	0.09	0.09	17.8%

...but all three indices have achieved their primary objectives.

It is important to point out that the objective of the rebalancing optimization is not to outperform the Parent Index. Rather it is intended to ensure that the carbon reduction index closely tracks its Parent Index, while significantly reducing the index's carbon footprint. In that regard all three indices have achieved their objectives. The average monthly tracking error of each of the three indices versus their respective Parent Indices is less than 0.10% (Exhibit P). Furthermore, they have consistently stayed within that range, with the Global, Global ex-Japan and Euro Indices falling within +/-0.10% of their Parent Indices 80%, 91% and 72% of the time. And the maximum deviation in any one month is a reasonable 0.32% for the Global Index, 0.44% for the global ex-Japan Index and 0.81% for the Euro Index.

Exhibit Q: Carbon reduction index monthly total return in local currency terms vs Parent Index



Appendix A: Corporate ESG Index Methodologies

ESG Tilt Index Methodology

Summary

The ESG Tilt Index methodology starts with a standard IDI bond index (the “Parent Index”), screens out securities of companies with significant involvement in controversial weapons and then adjusts security weightings to improve the overall ESG risk score of the ESG index (the “Index”).

Index construction

The Index includes all Parent Index constituents that are rated by Sustainalytics, the source for the ESG data, other than any security with a Sustainalytics “Controversial Weapons Most Significant Involvement-Score” (Sustainalytics Field ID 171610112399) greater than or equal to 20. Selected securities are divided into five categories based on the values of their Sustainalytics ESG Risk Scores (Sustainalytics Field ID 181110112399): <10, ≥ 10 to <20, ≥ 20 to <30, ≥ 30 to <40, and ≥ 40 . A weighting adjustment factor is applied to securities in each of the above categories as follows:

ESG Risk Score Category	Weighting Adjustment Factor
<10	$2.0 + (\text{ESG Risk Score YoY change\%} * -0.5)$, with a cap of 2.25 and floor of 1.75
≥ 10 to <20	$1.5 + (\text{ESG Risk Score YoY change\%} * -0.5)$, with a cap of 1.75 and floor of 1.25
≥ 20 to <30	$1.0 + (\text{ESG Risk Score YoY change\%} * -0.5)$, with a cap of 1.25 and a floor of 0.75
≥ 30 to <40	$0.5 + (\text{ESG Risk Score YoY change\%} * -0.5)$, with a cap of 0.75 and a floor of 0.30
≥ 40	$0.1 + (\text{ESG Risk Score YoY change\%} * -0.4)$, with a cap of 0.3 and a floor of 0.00

The preliminary constituent weights are equal to the constituents’ corresponding weights in the Parent Index times the weighting adjustment factor determined based on their respective ESG Risk Score Categories. The preliminary weights are then normalized to equal 100% to determine the final constituent weights.

Rebalancing

The Index composition is rebalanced on the last calendar day of each month (the “Rebalancing Date”). Face values of Index constituents are determined on the third Business Day before the last Business Day of the month (the “Estimation Date”) based on the Parent Index rebalancing preview constituent file on that date (the “Reference Universe”) and using the most recently available Sustainalytics ESG data as of that date. In the event a security is subsequently removed from the Parent Index between the Estimation Date and Rebalancing Date, it is also removed from the Index, with the weights of remaining securities scaled up on a pro rata basis.

Duration-Matched ESG Tilt Index Methodology

Summary

The Duration-Matched ESG Tilt Index methodology starts with a standard IDI bond index (the “Parent Index”), screens out securities of companies with significant involvement in controversial weapons and then adjusts security weightings to improve the overall ESG risk score of the Index, while matching key interest rate exposures of the Parent Index as closely as possible.

Index construction

The Index includes all Parent Index constituents that are rated by Sustainalytics, the source for the ESG data, other than any security with a Sustainalytics “Controversial Weapons Most Significant Involvement-Score” (Sustainalytics Field ID 171610112399) greater than or equal to 20. Selected securities are divided into five categories based on the values of their Sustainalytics ESG Risk Scores (Sustainalytics Field ID 181110112399): <10, ≥10 to <20, ≥20 to < 30, ≥30 to < 40, and ≥40. A weighting adjustment factor is applied to securities in each of the above categories as follows:

ESG Risk Score Category	Weighting Adjustment Factor
<10	2.0 + (ESG Risk Score YoY change% * -0.5), with a cap of 2.25 and floor of 1.75
≥10 to <20	1.5 + (ESG Risk Score YoY change% * -0.5), with a cap of 1.75 and floor of 1.25
≥20 to <30	1.0 + (ESG Risk Score YoY change% * -0.5), with a cap of 1.25 and a floor of 0.75
≥30 to <40	0.5 + (ESG Risk Score YoY change% * -0.5), with a cap of 0.75 and a floor of 0.30
≥40	0.1 + (ESG Risk Score YoY change% * -0.4), with a cap of 0.3 and a floor of 0.00

The preliminary constituent weights are equal to the constituents’ corresponding weights in the Parent Index times the factor determined based on their respective ESG Risk Scores. Next, the Index is segmented into cells by rating and Level 3 sector classification (e.g., BBB1-BBB3 Energy, BBB1-BBB3 Consumer Goods, etc.), and the DV01 (effective duration times weight) is calculated for each cell. If the DV01 of the Index is lower than that of Parent Index for a given cell, the weight of the longest duration security in that cell is increased up to its weighting adjustment factor cap and the weight of the lowest duration security in the cell is decreased by the same amount subject to its weighting adjustment factor floor. If the full weight to be reallocated to the shortest security cannot be accomplished due to the weighting adjustment factor cap, then the remainder is reallocated to the next-shortest security. This process is repeated sequentially with the next longest duration securities until either the DV01 of the cell is matched or there is no further room for adjustment within the caps/floors. If the DV01 of Index is greater than that of Parent Index for a given cell, the same process is followed but reallocating the Index weight of the longest securities to the shortest.

After adjusting the DV01 of individual rating/sector cells, if the resulting effective duration of the Index does not match that of the Parent Index, a final adjustment is performed. If the Index duration is lower than that of Parent Index, the weight of the security with the longest duration having an ESG Risk Score lower than 20 is increased by the amount needed to achieve the duration match, subject to its weighting adjustment factor cap, and the weight of the security with the shortest duration having an ESG Risk Score greater than or equal to 30 is decreased by the same amount, subject to its weighting adjustment factor floor. This process is repeated sequentially until the duration of Index matches that of the Parent Index. If the duration of the Parent Index cannot be met, then all factor caps/floors are increased/decreased by 0.25 and the process is repeated. The factor adjustments will iterate up to a maximum adjustment of 5.0 until the duration match is achieved. The adjusted weights are then normalized to equal 100% to determine the final constituent weights. (Note: in some situations, an exact duration match cannot be achieved due to the caps/floors.)

Rebalancing

The Index composition is rebalanced on the last calendar day of each month (the “Rebalancing Date”). Face values of Index constituents are determined on the third Business Day before the last Business Day of the month (the “Estimation Date”) based on the Parent Index rebalancing preview constituent file on that date (the “Reference Universe”) and using the most recently available Sustainalytics ESG data as of that date. In the event a security is subsequently removed from the Parent Index between the Estimation Date and Rebalancing Date, it is also removed from the Index, with the weights of remaining securities scaled up on a pro rata basis.

ESG Best-in-Class Index Methodology

Summary

The ESG Best-in-Class Index methodology starts with a standard IDI bond index (the “Parent Index”), screens out securities of companies with certain business involvement and/or high ESG Risk Scores, and then adjusts security weightings of the remaining constituents so as to closely match the rating and sector distributions of the Parent Index.

Index construction

The Index includes all Parent Index constituents that are rated by Sustainalytics, the source for the ESG data, other than any security with (i) a Sustainalytics “Controversial Weapons Most Significant Involvement-Score” (Sustainalytics Field ID 171610112399) greater than or equal to 20 or (ii) a Sustainalytics ESG Risk Scores (Sustainalytics Field ID 181110112399) that is greater than or equal to 30. The weights of the remaining constituents are then normalized to equal 100%.

Next, the Index is segmented into cells by summary rating and Level 3 sector classification (e.g., BBB1-BBB3 Energy, BBB1-BBB3 Consumer Goods, etc.). The security weights in each cell of the Index are adjusted on a pro rata basis to match that of the corresponding Parent Index cell. If an Index cell is not populated but the corresponding cell of the Parent Index has a weight greater than zero, the unallocated weight is redistributed on a pro rata basis across the other cells of the same Level 3 sector classification. If no Index cells within a Level 3 sector classification are populated, the unallocated weight is redistributed pro rata across all populated cells within the same Level 2 sector classification.

Rebalancing and general calculation assumptions

The Index composition is rebalanced on the last calendar day of each month (the “Rebalancing Date”). Face values of Index constituents are determined on the third Business Day before the last Business Day of the month (the “Estimation Date”) based on the Parent Index rebalancing preview constituent file on that date (the “Reference Universe”) and using the most recently available Sustainalytics ESG data as of that date. In the event a security is subsequently removed from the Parent Index between the Estimation Date and Rebalancing Date, it is also removed from the Index, with the weights of remaining securities scaled up on a pro rata basis.

DISCLOSURES

This document is provided for informational purposes only. The information contained in this document is subject to change without. Nothing herein should in any way be deemed to alter the legal rights and obligations contained in agreements between ICE Data Indices, LLC (“ICE Indices”) and/or affiliates and their clients relating to any of the products or services described herein. This document may include observations made by ICE Indices of general market movements and trends, but it is not meant to be a solicitation or a recommendation to buy, sell or hold securities. ICE Indices does not provide legal, tax, accounting, investment or other professional advice. Clients should consult with an attorney, tax, or accounting professional regarding any specific legal, tax, or accounting situation. For the purpose of calculating any Index, ICE Indices has relied on publicly available sources and has not independently verified the information extracted from these sources and accepts no responsibility or liability in respect thereof. ICE Indices, its affiliates and its third-party data providers and licensors (collectively “ICE Indices Parties”) do not guarantee that the Content is accurate, complete, timely or error free and it should not be relied upon as such. ICE Indices Parties are not responsible for any errors, omissions, or interruptions regardless of the cause, or for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN “AS IS” BASIS. ICE INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES AND CONDITIONS, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM VIRUSES, BUGS, WORMS, OTHER HARMFUL COMPONENTS OR OTHER PROGRAM LIMITATIONS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT’S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall ICE Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages. Any available index returns represent past performance and are not indicative of any specific investment. The Content (including any of the output derived from any analytic tools or models) is not intended to predict actual results, which may differ substantially from those reflected. Past performance is not necessarily indicative of future results.

Historical returns and weights before the launch date of an Index are based upon backtested data. For the period prior to the launch date of an Index, simulated performance data has been provided as an illustration of how the Index would have performed during the relevant period had the Index been calculated by IDI using the current Index methodology. Such simulated performance data has inherent limitations, as the simulated data is produced by the retroactive application of the methodology. Simulated performance data is based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance and may reflect a bias toward strategies that have performed well in the past.

Intercontinental Exchange, Inc. keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of Intercontinental Exchange, Inc. may have information that is not available to other business units. ICE Indices has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process. There is no obligation on ICE Indices to disclose information held by it in relation to any Index to other parties.

The various businesses of Intercontinental Exchange, Inc. provide a wide range of products and services to a diverse group of clients and, as such, Intercontinental Exchange, Inc. faces potential conflicts of interest in the ordinary course of its business. Intercontinental Exchange, Inc. may be acting in a number of capacities in connection with Investable Products or other transactions entered into in relation to ICE indices. Intercontinental Exchange, Inc., acting in such capacities in connection with such transactions, shall have only the duties and responsibilities expressly agreed to by it in its relevant capacity and shall not, by virtue of its acting in any other capacity, be deemed to have other duties or responsibilities or be deemed to hold a standard of care other than as expressly provided with respect to each such capacity. ICE Indices has established policies and procedures designed to identify and address conflicts of interest. In addition, Intercontinental Exchange, Inc. provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities may form part of any index or other evaluation ICE Indices carries out.

ABOUT INTERCONTINENTAL EXCHANGE Intercontinental Exchange, Inc. (NYSE:ICE) operates a leading network of exchanges and clearing houses. ICE’s exchanges and clearing houses, which include the New York Stock Exchange, serve global commodity and financial futures and equities markets. The New York Stock Exchange is the world leader in capital raising and equities trading. ICE is a leading provider of data services across global markets. Trademarks of ICE and/or its affiliates include Intercontinental Exchange, ICE, ICE block design, NYSE, and New York Stock Exchange. Information regarding additional trademarks and intellectual property rights of Intercontinental Exchange, Inc. and/or its affiliates is located at www.intercontinentalexchange.com/terms-of-use. BofA is a trademark of Bank of America Corporation in the United States and other countries. Other products, services or company names mentioned herein are the property of, and may be the service mark or trademark of, their respective owners.

The information provided by Sustainalytics is provided “as is” and Sustainalytics assumes no responsibility for errors or omissions. Sustainalytics cannot be held liable for damage arising from the use of the Index or information contained herein in any manner whatsoever. Nothing contained in the Index shall be construed as to make a representation or warranty, express or implied, regarding the advisability to invest in or include companies in investable universes and/or portfolios. <https://www.sustainalytics.com/>

ABOUT ICE DATA SERVICES: ICE Data Services is the marketing name used to refer to the suite of pricing, market data, analytics, and related services offered by Intercontinental Exchange, Inc. and certain of its affiliates, including ICE Data Indices, LLC. Thousands of financial institutions and active traders, as well as hundreds of software and service providers, subscribe to ICE Data Services’ offerings which include fixed income evaluations, reference data, real-time market data, trading infrastructure services, fixed income analytics, desktop solutions and web-based solutions. ICE Data Services’ offerings support clients around the world with mission-critical functions, including portfolio valuation, regulatory compliance, risk management, electronic trading and wealth management.