Performance and Risk Analysis of Index-Based ESG Portfolios

GUIDO GIESE, LINDA-ELING LEE, DIMITRIS MELAS, ZOLTÁN NAGY, AND LAURA NISHIKAWA

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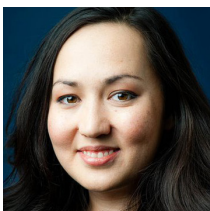
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I n 2006, the United Nations–supported Principles for Responsible Investment (UNPRI) set out six principles for integrating environmental, social, and governance (ESG) factors into the management of financial assets.[1] The first two principles are the most relevant to integrating ESG into the portfolio management process; they ask signatories to incorporate ESG considerations into their financial analysis and decision-making processes and to include ESG issues in their ownership policies and practices.

UNPRI further provided guidance on how institutional investors can integrate ESG into their asset management processes.[2] However, recent industry surveys conducted by State Street Global Advisors[3] (SSGA) and by the Chartered Alternative Investment Analyst (CAIA) Association and the global private equity company Adveq[4] revealed that the asset management industry still lacks best practice standards as well as sufficiently experienced staffs to help them integrate ESG strategically and consistently.

It is interesting to note the wide range of research in academia and the asset management industry about the financial benefits of ESG investing, which has led to more than 2,000 research papers in this field.[5] However, while equally important, the questions of how to achieve consistency when integrating ESG and what methodologies to use have not received the same level of attention. As a result, as pointed out in the above-mentioned surveys, ESG integration currently is often applied inconsistently and incompletely (that is, not across all mandates of asset owners' portfolios), and asset owners therefore face the risk of not being able to fully exploit the potential benefits of ESG integration in their search for better risk-adjusted returns.

Unlike active investors who use multiple avenues for integrating ESG factors into fundamental analysis or portfolio construction, indexed investors have little choice but to hold

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[1] Signatories commit to implementing these principles. The number of signatories to UNPRI has grown from only about 100 in 2006, representing $6.5 trillion in assets under management (AUM), to about 1,900, with more than $68 trillion in AUM, by the end of 2017. https://www.unpri.org.

[2] The guide outlines basic principles as well as case studies covering practically all areas of the asset management value chain—fundamental financial stock analysis; integration into portfolio construction for index-based, factor investing, and active portfolios or products; sell-side research; manager selection; and portfolio risk management and reporting. See "A Practical Guide to ESG Integration for Equity Investing." https://www.unpri.org/download_report/22600.

[3] See Eccles, Kastrapeli, and Potter (2017).

[4] Now Schroder Adveq.

[5] According to a meta-study by DWS and the University of Hamburg, "ESG & Corporate Financial Performance: Mapping the Global Landscape," December 2015.

all or most index constituents. Active engagement is widely recognized as an effective means to promote sustainable long-term growth and risk management, but such efforts can be costly and difficult to conduct at scale.

Instead, investors can integrate ESG directly into the design of index investments, affording them access to an approach that systematically integrates ESG ratings. The general advantages of index investing—that is, consistency, transparency, and cost efficiency—also apply to index investing with ESG. In recent years, some of the largest asset owners in the United States, Europe, and Asia Pacific have adopted ESG benchmarks at both levels, that is, for defining their overall policy benchmark and for setting and measuring the performance of individual allocations.

Academic research by Fatemi, Fooladi, and Wheeler (2009) as well as Hoepner, Rezec, and Siegl (2013) showed that the main benefit of ESG investing stems from mitigating portfolio risks. Fatemi, Fooladi, and Tehranian (2015) argue that the lower level of risk for companies with good ESG characteristics can be explained by the fact that such companies have more dedicated employees, more loyal customers, a lower chance of facing lawsuits, and thus a higher likelihood of surviving longer. In a technical analysis controlling for other factors, Giese et al. (2019) showed that companies with high MSCI ESG Ratings display lower idiosyncratic and systematic risk in the MSCI World universe for a 10-year study period, so they are less likely to suffer severe company-specific drawdowns and are more crisis-resilient.

It is interesting to note that the aforementioned surveys revealed a very important observation: The asset owners' main focus for the integration of ESG has shifted to concentrating on financial benefits rather than social benefits. Thus, such owners are likely to seek to improve risk-adjusted returns when integrating ESG, without disturbing their main investment goals.

The purpose of this article is to address two key questions: first, the methodologies one can use to integrate ESG into index-based portfolios, and second, how much ESG integration can help enhance risk-adjusted returns in real-world index-based portfolios and whether there may be regional differences in ESG characteristics as well as the performance impact of ESG integration.

To ensure realistic and credible results, this article uses the track record of existing ESG indexes that indexed investors have used for many years to address these questions.

We structure this article as follows: First, we summarize the different options one can use to integrate an ESG score into an existing market-cap benchmark. Second, we look at the track record of global and regional index-based allocations. Third, we summarize our observations in the conclusion.

## INDEX METHODOLOGY FOR USE IN INDEXED PORTFOLIOS

We will use existing ESG index methodologies as a proxy for the financial risk and performance profile of index-based ESG portfolios. In general, ESG can be integrated into existing market-cap benchmarks by using two methodology components:

1. **An ESG signal:** We will use MSCI ESG industry-adjusted scores (ESG scores) as a basis for ESG integration. These scores provide a forward-looking assessment of companies' exposure to financially relevant ESG-related risks and opportunities and their capability to manage those risks and opportunities. These scores are mapped linearly to ESG rating classes AAA to CCC.
2. **An index integration methodology:** Options include (a) an ESG signal to perform a best-in-class selection of leading constituents and (b) tilts toward constituents with stronger ESG scores and tilts away from those with weaker ESG scores.

Most large index providers have launched both types of ESG indexes in parallel, that is, indexes following a best-in-class selection approach and indexes using a weight-tilt methodology. The reason is the tradeoff between the level of ESG integration on one hand and the diversification and tracking error on the other hand, and both methodologies are linked to a different choice regarding this tradeoff. A weight-tilt methodology offers a more diversified portfolio, which is typically closer to the benchmark, whereas a best-in-class selection reaches a higher level of ESG integration.

Distribution of Industry-Adjusted ESG Scores for Three Sub-Regions
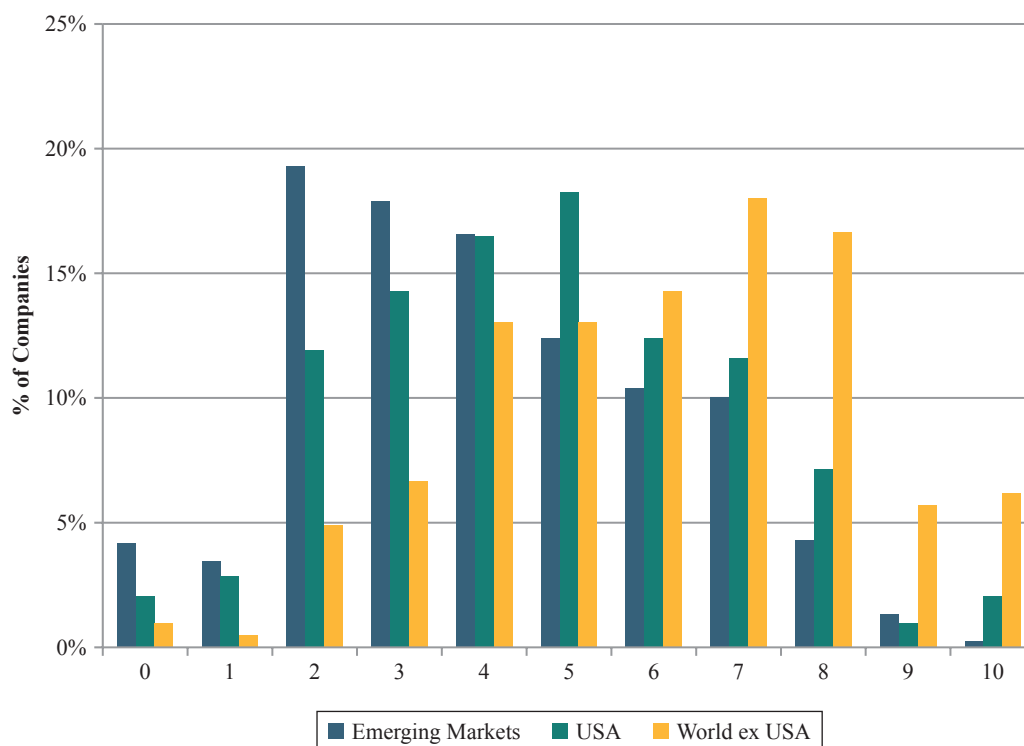
Source: As of December 31, 2017. MSCI.

MSCI has created two standard index methodologies to support the integration of ESG into benchmarks: the MSCI ESG Leaders Index, which uses a best-in-class selection of the upper half of ESG-rated stocks per region and sector, and the MSCI ESG Universal Index, which reweights the index toward companies with high MSCI ESG Ratings and high ESG Momentum.

These two indexes address different investment preferences. The ESG Leaders Index shows a much stronger integration of ESG (due to its best-in-class selection) than the ESG Universal Index. However, the ESG Leaders Index shrinks the universe to roughly half the number of constituents, which leads to a more concentrated index.

Both index methodologies allow for regional breakdowns, analogous to their parent indexes. Most asset owners have separate allocations for emerging and developed markets. Within developed markets, the U.S. market is often managed separately because of its size and unique opportunity set. In addition, the ESG

profile of these regions is very different (Exhibit 1), with emerging markets showing the lowest average level of ESG scores, developed markets (except the US market) the highest average, and the United States in between.

For the purpose of this article, we use the MSCI ESG Leaders Index,[6] with its stronger level of ESG integration, as the basis for our analysis because the index has a live track record since August 2010 and is the benchmark for a variety of funds and exchange-traded funds.

We first looked at a hypothetical global index-based allocation and then delved into regional allocations replicating the MSCI ESG Leaders Index. We restricted our analysis to the live period of each respective index, with the exception of the MSCI Emerging Markets ESG

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[6]See MSCI ESG Leaders Indexes Methodology. https://www.msci.com/eqb/methodology/meth_docs/MSCI_ESG_Leaders_Indexes_Methodology_June_2017.pdf.

E X H I B I T 2

Key Performance Indicators for MSCI ACWI ESG Leaders Index

	MSCI ACWI Index	MSCI ACWI ESG Leaders Index
Total Return (%)	11.5	11.7
Total Risk (%)	12.4	12.0
Return/Risk	0.93	0.98
Sharpe Ratio	0.90	0.95
Active Return (%)	0.0	0.2
Tracking Error (%)	0.0	1.0
Information Ratio	N/A	0.19
Historical Beta	1.00	0.97
No. of Stocks	2,457	1,141
Turnover (%)	2.0	6.8
Price to Book	1.9	2.1
Price to Earnings	16.6	17.3
Dividend Yield (%)	2.6	2.6

Source: Data from August 31, 2010 to December 31, 2017.

Leaders Index, which has a shorter live history, so we combined live history and simulated historical data.[7]

GLOBAL MARKETS ALLOCATION

We compared the risk and performance profile of the MSCI ACWI ESG Leaders Index to the parent MSCI ACWI Index (Exhibit 2). The results mirrored the above-mentioned academic results: Risk, return, and risk–adjusted return all were significantly improved while tracking error was only 1 percent, which is important for asset owners who enforce strict limits

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[7] The MSCI Emerging Markets ESG Leaders Index was launched in June 2013. We used index histories since August 2010 across all regions. Thus, we combined a simulated history from August 2010 to May 2013 with a live history from June 2013 to December 2017 for this index. This report contains hypothetical, backtested, or simulated performance results. There are frequently material differences between the backtested or simulated performance results and the actual results subsequently achieved by any investment strategy. The analysis and observations are limited solely to the period of the relevant historical data, backtest, or simulation. Past performance—whether actual, backtested, or simulated—is no indication or guarantee of future performance. None of the information or analysis herein is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision or asset allocation and should not be relied on as such.

E X H I B I T 3

Key Risk Indicators for MSCI ACWI ESG Leaders Index

	MSCI ACWI Index	MSCI ACWI ESG Leaders Index
Absolute Risk Metrics		
Total Risk (%)	12.4	12.0
Annualized Downside Deviation (%)	7.4	7.0
Sortino Ratio	1.56	1.67
VaR @ 95%	−6.1	−5.8
VaR @ 99%	−9.2	−8.7
Expected Shortfall (CVaR) @ 95%	−8.1	−7.7
Expected Shortfall (CVaR) @ 99%	−9.4	−8.9
Max Drawdown (%)	22.9	21.3
Max Drawdown Period (in months)	5	5
Skewness	−0.24	−0.18
Kurtosis	4.10	4.03
Relative Risk Metrics		
Tracking Error (%)	0.0	1.0
Max Drawdown of Active Returns (%)	0.0	2.0
Max Drawdown of Active Returns Period (in months)	0	10

Source: Data from August 31, 2010 to December 31, 2017.

on index-based allocations. We also observed higher levels of valuation as measured by price-to-book and price-to-earnings ratios.

In addition, Exhibit 3 shows that all relevant risk measures, such as value at risk (VaR) and expected short-fall, as well as tail-risk measures, such as drawdowns and kurtosis, experienced a clear improvement over the parent index.

In addition, Exhibits 4 and 5 compare the ESG profile and the diversification profile. We observe a clear improvement in the average level of ESG scores as well as the exposure to the ESG leaders (that is, companies rated AA or AAA). At the same time, the universe of the MSCI ACWI ESG Leaders Index covers less than half of the opportunity set of its parent index and slightly less than half of its market cap, with a proportional representation of the size segments.

Next, we assess whether these observations were valid at a regional level. In addition, we examine to what extent risk and return improvements were due to the MSCI ESG Leaders Index securities selection methodology or to exposures to common factors.

Exhibit 4
Index Profile of MSCI ACWI ESG Leaders Index

	MSCI ACWI Index	MSCI ACWI ESG Leaders Index
Integration		
Key Integration Metrics		
ESG Score	5.5	6.6
ESG Leaders (AAA-AA) (%)	22.3	38.4
ESG Laggards (B-CCC) (%)	14.3	3.1
ESG Trend Positive (%)	18.1	12.5
ESG Trend Negative (%)	8.0	6.7

Source: Data as of December 31, 2017.

Exhibit 5
Key Index Profile of MSCI ACWI ESG Leaders Index

	MSCI ACWI Index	MSCI ACWI ESG Leaders Index
Concentration Metrics		
Avg No. of Stocks	2,457	1,141
Effective No. of Stocks	450	286
Market Cap Coverage (%)	100.0	48.3
Top 10 Sec Wt (%)	8.7	11.8
Size Family Exposures		
Large (%)	82.7	82.2
Mid (%)	17.3	17.8

Source: Data as of December 31, 2017.

EMERGING MARKETS ALLOCATION

The MSCI Emerging Markets ESG Leaders Index demonstrated improved returns, reduced risks, and higher valuations compared to its parent, the MSCI Emerging Markets Index, during the study period (Exhibit 6). Likewise, the diversification level of the MSCI ESG Leaders Index was lower, and the index turnover higher, than that of the parent index.

These findings were consistent with the (the MSCI EM Index) fundamental findings in Giese et al. (2019).

To probe deeper, we examined to what extent performance and risk improvements were due to the selection of stocks with high ESG ratings or to exposure to other factors.

Exhibit 7 shows a factor attribution for the MSCI Emerging Markets ESG Leaders Index during our

Exhibit 6
Key Risk and Performance Indicators for MSCI Emerging Markets ESG Leaders

	MSCI EM (Emerging Markets) Index	MSCI EM (Emerging Markets) ESG Leaders Index
Total Return (%)	5.3	9.3
Total Risk (%)	17.2	16.1
Return/Risk	0.31	0.58
Sharpe Ratio	0.29	0.56
Active Return (%)	0.0	4.0
Tracking Error (%)	0.0	2.9
Information Ratio	N/A	1.37
Historical Beta	1.00	0.92
No. of Stocks	825	338
Turnover (%)	4.6	6.2
Price to Book	1.6	2.0
Price to Earnings	13.1	14.8
Dividend Yield (%)	2.6	2.6

Sources: Data from August 31, 2010 to December 31, 2017. Data from August 2010 to May 2013 are simulated; data from June 2013 to December 2017 are from the live history.

study period. By far, stock selection was the strongest contributor to performance (at 2.7 percentage points per year). The best–in–class selection of companies with high ESG ratings was the main source of active returns in the history of the index.

Other exposures made smaller contributions. Factor exposure (in particular, active risk indexes, industry, and country exposures) contributed slightly to outperformance. These exposures to industries, countries, and risk factors were unintentional; the index selection methodology aims to mitigate these active exposures by selecting constituents at a regional and sector level. However, some residual exposures remained in the index, particularly in regional indexes where the total number of constituents available to diversify away country or industry risk was smaller than the number in the global universe.

Thus, the MSCI Emerging Markets ESG Leaders Index not only led to a significant improvement in risk and performance during our study period—our analysis shows that most of its outperformance came from securities selection.

Digging deeper, to what extent did overweights and underweights of index constituents (that is, securities

Performance Attribution for MSCI Emerging Markets ESG Leaders Index

	Total	
	9.31	
	16.12	

Return (%)
Risk (% Std Dev)

Benchmark		Active	
5.29		4.02	
17.24		2.94	

Currency Selection		Cash Equity	Active Equity
−0.02		0	4.04
0.69		0	2.72

Explicit Currency	Implicit Currency	World Equity	Countries	Industries	Risk Indices	Asset Selection
0	−0.02	0.00	0.32	0.49	0.53	2.70
0	0.69	0.00	0.97	0.81	1.24	1.50

BtoP	Earn. Yield	LT Reversal	Size	Mid Cap	Momentum	Beta	Res. Vol.
−0.13	−0.08	0.01	−0.03	−0.01	0.48	−0.15	0.11
0.16	0.15	0.12	0.08	0.03	0.39	0.66	0.14

Leverage	Earn. Qlty	Inv. Qlty	Profitability	Earn. Var.	Div. Yield	Growth	Liquidity
−0.01	0.00	0.01	0.07	0.09	0.01	0.06	0.10
0.03	0.02	0.02	0.06	0.11	0.04	0.06	0.11

Sources: Annualized gross returns from August 31, 2010 to December 31, 2017. Data from August 2010 to May 2013 are simulated; data from June 2013 to December 2017 are from the live history.

not selected for the ESG Leaders Index) contribute to outperformance? To measure this relationship, we looked to the cash–flow channel, whose economic rationale is that companies with high ESG ratings are more competitive and can generate abnormal returns.[8] Thus, companies with high ratings were overweighted in the index while those with low ratings were underweighted (or excluded). Exhibit 8 shows the cumulative stock-specific performance contribution against the cumulative average active weight in the MSCI Emerging Markets ESG Leaders Index. The majority of both overweights

and underweights contributed to outperformance relative to the parent index, which is consistent with the cash–flow channel rationale. Note: The overweights contributed more to outperformance than the underweights did during our study period.

WORLD EX USA ALLOCATION

Next, we turned to the MSCI World ex USA Index, which showed the highest average ESG scores. Exhibit 9 summarizes the key performance and risk indicators for the live period of the MSCI World ex USA ESG Leaders Index.

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[8] See Giese et al. (2019) for more details.

EXHIBIT 8

Overweights and Underweights Aided MSCI Emerging Markets Leaders Index Returns
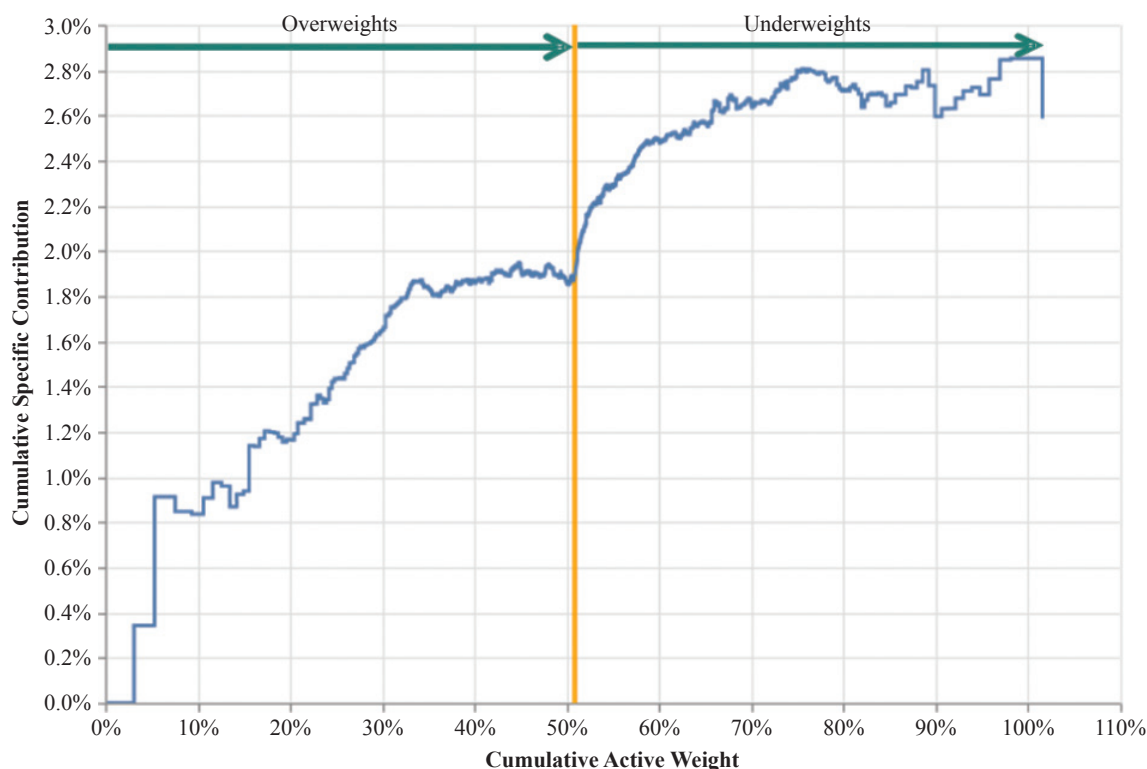
Sources: Data from August 31, 2010 to December 31, 2017. The chart shows the cumulative annualized specific performance contribution of MSCI Emerging Markets Leaders Index versus cumulative average overweights and underweights (index components are sorted from largest to smallest average active weight).

EXHIBIT 9

Key Risk and Performance Indicators for MSCI World ex USA ESG Leaders Index

	MSCI World ex USA Index	MSCI World ex USA ESG Leaders Index
Total Return (%)	8.2	8.8
Total Risk (%)	14.1	13.7
Return/Risk	0.58	0.64
Sharpe Ratio	0.56	0.62
Active Return (%)	0.0	0.7
Tracking Error (%)	0.0	1.1
Information Ratio	N/A	0.59
Historical Beta	1.00	0.97
No. of Stocks	1,020	472
Turnover (%)	1.7	6.9
Price to Book	1.6	1.7
Price to Earnings	16.3	16.3
Dividend Yield (%)	3.2	3.3

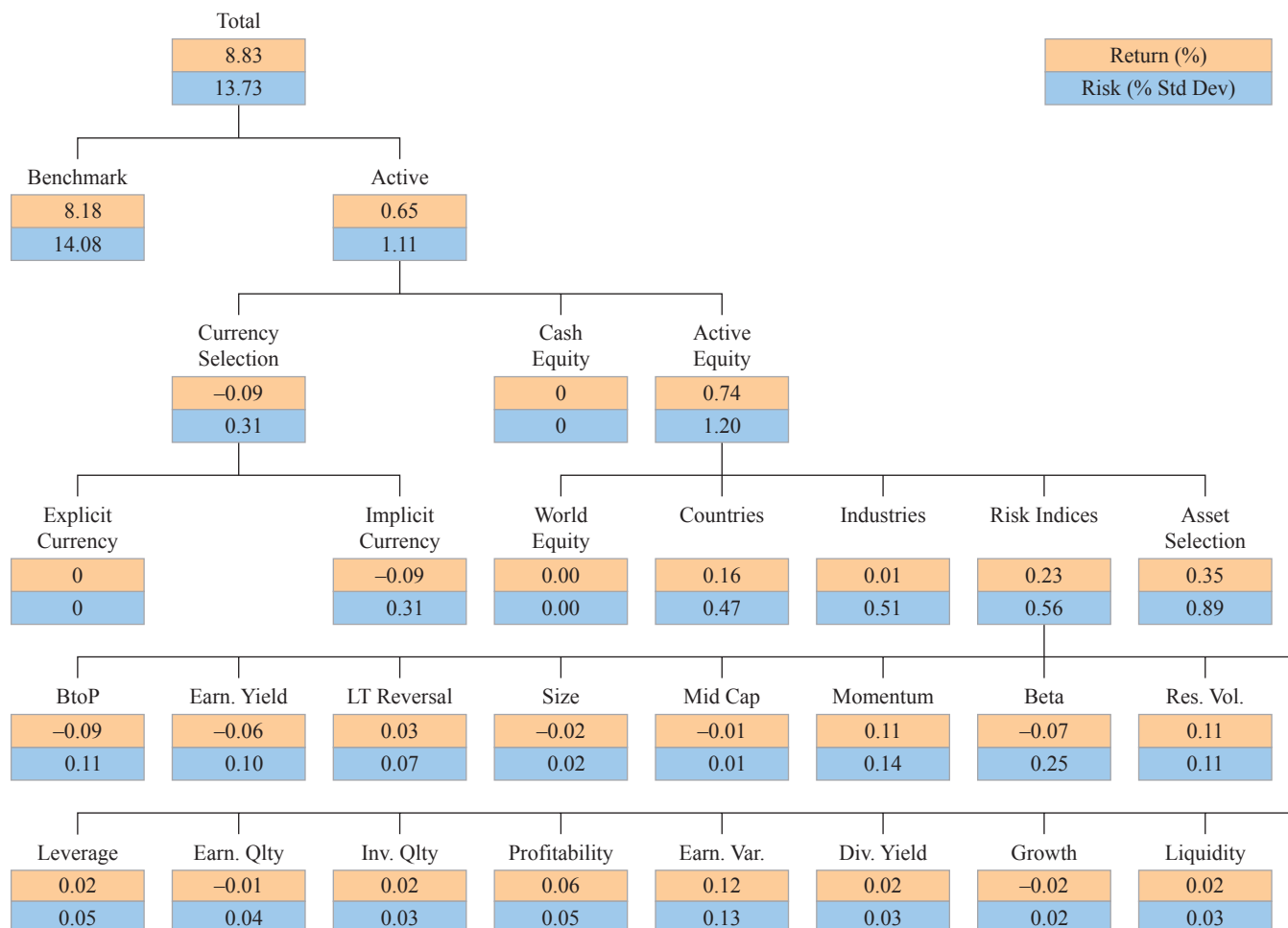*Source: Data from August 31, 2010 to December 31, 2017 (live index history).*

Returns and risk characteristics improved while valuation and dividend yield measures rose, consistent with the valuation and performance characteristics that we observed at a global level.

Exhibit 10 shows the corresponding performance attribution. Unintentional exposures to industries and countries were quite small, indicating that the index methodology was effective in keeping the country and industry risk exposures close to those of the parent index. Unintentional exposures to risk factors also slightly enhanced performance. The strongest contribution to improved performance came from asset selection (as shown in Exhibit 10).

To better understand how stock selection helped performance, Exhibit 11 shows the cumulative specific performance contribution versus the cumulative active weights for both overweights and underweights in the index. Unlike their role in the MSCI Emerging Markets ESG Leaders Index, overweights did not add

E X H I B I T 1 0
Performance Attribution for MSCI World ex USA ESG Leaders Index

	Return (%)
	Risk (% Std Dev)

Total

Return (%)	Risk (% Std Dev)
8.83	13.73

Benchmark

Return (%)	Risk (% Std Dev)
8.18	14.08

Active

Return (%)	Risk (% Std Dev)
0.65	1.11

Currency Selection

Return (%)	Risk (% Std Dev)
−0.09	0.31

Cash Equity

Return (%)	Risk (% Std Dev)
0	0

Active Equity

Return (%)	Risk (% Std Dev)
0.74	1.20

	Explicit Currency	Implicit Currency	World Equity	Countries	Industries	Risk Indices	Asset Selection
Return (%)	0	−0.09	0.00	0.16	0.01	0.23	0.35
Risk (% Std Dev)	0	0.31	0.00	0.47	0.51	0.56	0.89

	BtoP	Earn. Yield	LT Reversal	Size	Mid Cap	Momentum	Beta	Res. Vol.
Return (%)	−0.09	−0.06	0.03	−0.02	−0.01	0.11	−0.07	0.11
Risk (% Std Dev)	0.11	0.10	0.07	0.02	0.01	0.14	0.25	0.11

	Leverage	Earn. Qlty	Inv. Qlty	Profitability	Earn. Var.	Div. Yield	Growth	Liquidity
Return (%)	0.02	−0.01	0.02	0.06	0.12	0.02	−0.02	0.02
Risk (% Std Dev)	0.05	0.04	0.03	0.05	0.13	0.03	0.02	0.03

Source: Annualized data from August 31, 2010 to December 31, 2017 (live index history).

to outperformance during our study; underweights accounted for all of the index outperformance.

US REGIONAL INDEX-BASED ALLOCATION

The MSCI USA Index, whose average ESG scores fell between those of the emerging markets and the rest of the developed markets, is unique because of its size and breadth of opportunities. We used the MSCI USA ESG Leaders Index as a proxy for an index-based portfolio. Exhibit 12 summarizes the key risk and performance attribution indicators for the index.

Similar to the other regional indexes, the MSCI ESG Leaders Index had key risk measures that were lower than those for the parent index during the live study period.

In contrast to their relative performance in other regions, however, the MSCI USA ESG Leaders Index underperformed the parent index during its live history. Exhibit 13 illustrates the cause of the underperformance. Stock selection (asset selection) accounted for an annual drag on returns of −1.45 percentage points. In contrast to the other two regional examples, selecting companies with high ESG ratings led to underperformance.

Exhibit 14 shows the cumulative specific performance contribution versus the cumulative active weights for both overweights and underweights in the MSCI USA ESG Leaders Index. The cumulative performance

E X H I B I T 1 1
Underweights and Enhanced MSCI World ex USA ESG Leaders Index Returns
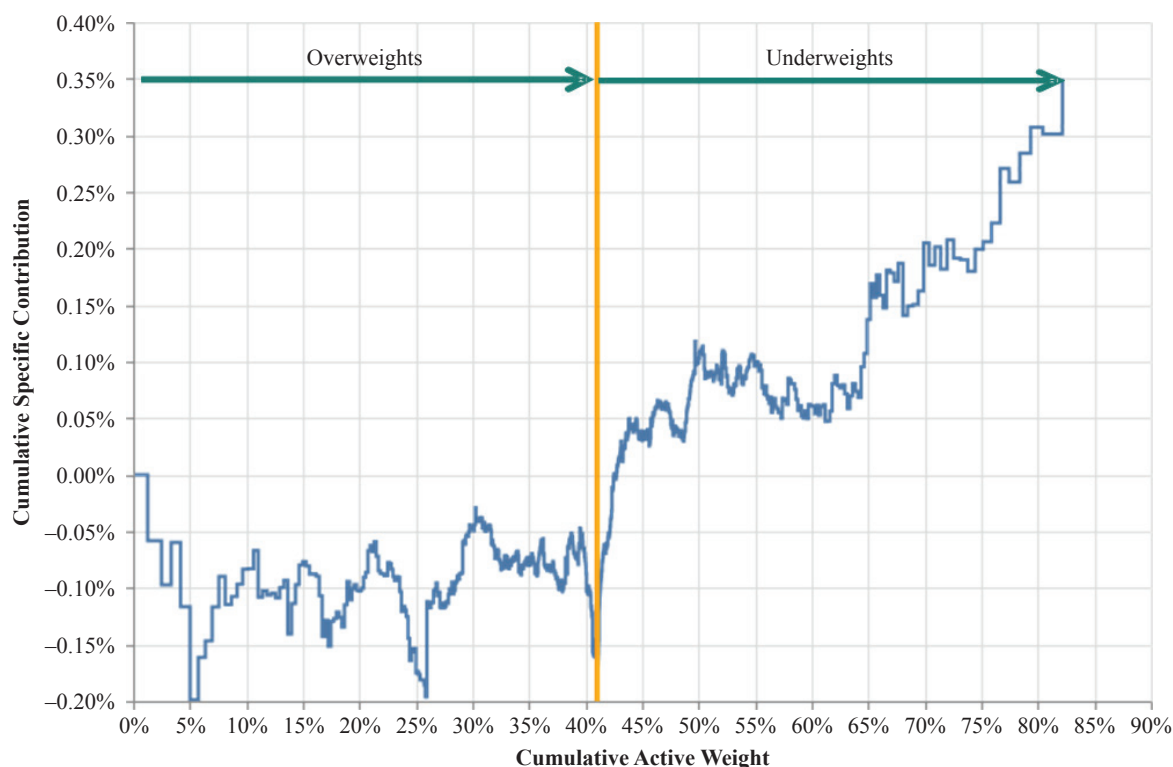
Sources: Data from August 31, 2010 to December 31, 2017 (live index history). Cumulative annualized specific performance contribution of MSCI World ex USA ESG Leaders Index versus cumulative average overweights and underweights (index components are sorted from largest to smallest active weight).

E X H I B I T 1 2
Key Risk and Performance Indicators for MSCI USA ESG Leaders Index

	USA	MSCI USA ESG Leaders Index
Total Return (%)	16.0	14.8
Total Risk (%)	11.1	11.0
Return/Risk	1.44	1.35
Sharpe Ratio	1.41	1.32
Active Return (%)	0.0	−1.2
Tracking Error (%)	0.0	1.5
Information Ratio	N/A	−0.78
Historical Beta	1.00	0.98
No. of Stocks	612	332
Turnover (%)	1.8	8.1
Price to Book	2.6	2.8
Price to Earnings	18.0	18.9
Dividend Yield (%)	2.0	2.0

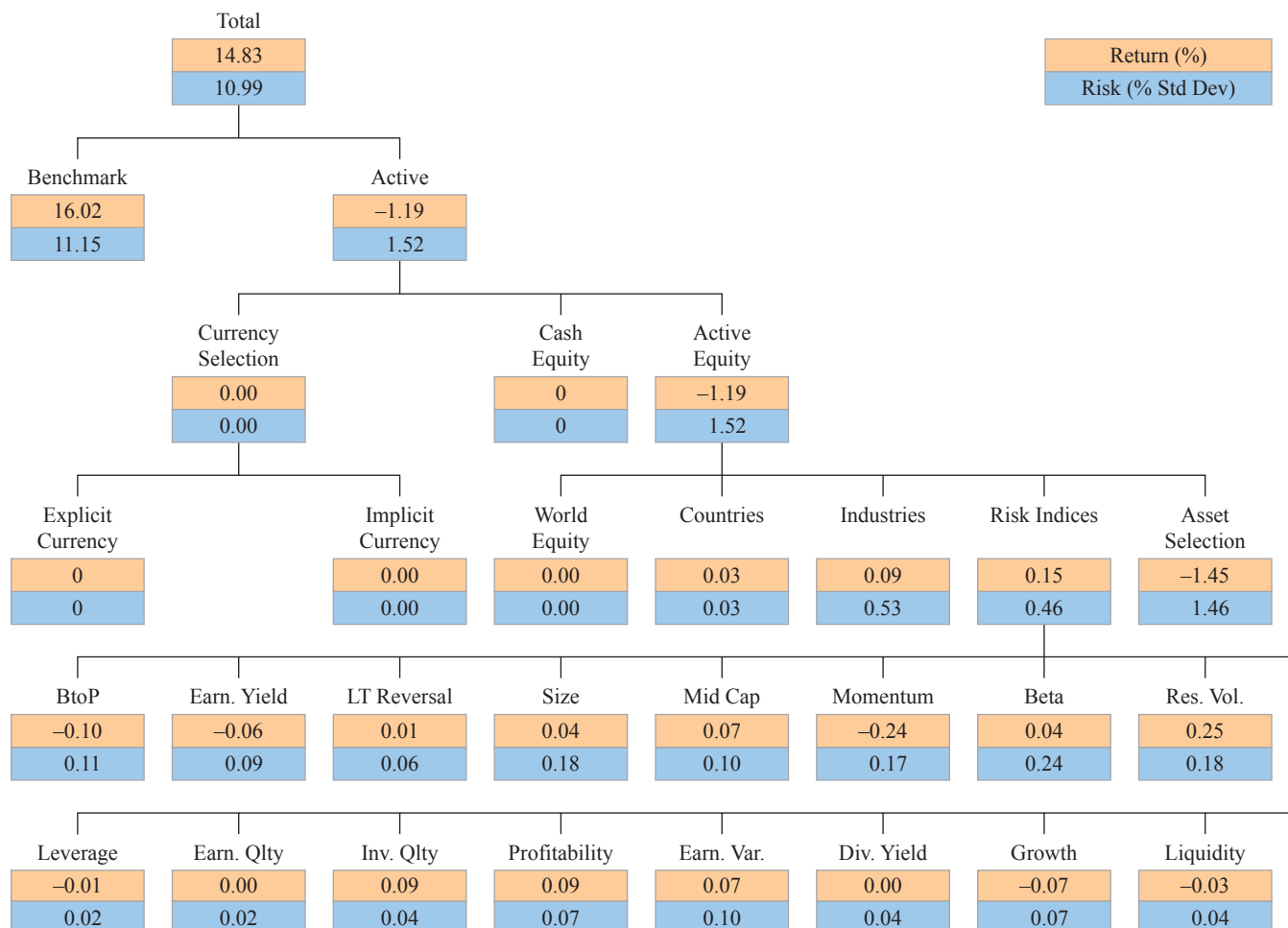*Source: Annualized data from August 31, 2010 to December 31, 2017 (live index history).*

contributions from both overweights and underweights were negative, in particular for large-cap constituents (see the left and right margins).

What led to this underperformance? Largely US technology companies; Exhibit 15 shows this impact. Five of the seven largest contributors to stock-specific performance were tech companies; the aggregate specific annualized return of −0.94 percent for these five tech stocks explains nearly two-thirds of the negative stock-specific performance of the index. These stocks included Apple Inc., Facebook Inc., and Amazon.com Inc.; all three performed strongly but were not included in the MSCI USA ESG Leaders Index because of their below-average ESG ratings. At the same time, the index included tech stocks such as IBM and HP Inc.—companies that underperformed their sector peers during the index's live history.

While ESG ratings did not identify the US tech companies with the best growth opportunities during

Performance Attribution for MSCI USA ESG Leaders Index

Node	Return (%)	Risk (% Std Dev)
Total	14.83	10.99
Benchmark	16.02	11.15
Active	−1.19	1.52
Currency Selection	0.00	0.00
Cash Equity	0	0
Active Equity	−1.19	1.52
Explicit Currency	0	0
Implicit Currency	0.00	0.00
World Equity	0.00	0.00
Countries	0.03	0.03
Industries	0.09	0.53
Risk Indices	0.15	0.46
Asset Selection	−1.45	1.46
BtoP	−0.10	0.11
Earn. Yield	−0.06	0.09
LT Reversal	0.01	0.06
Size	0.04	0.18
Mid Cap	0.07	0.10
Momentum	−0.24	0.17
Beta	0.04	0.24
Res. Vol.	0.25	0.18
Leverage	−0.01	0.02
Earn. Qlty	0.00	0.02
Inv. Qlty	0.09	0.04
Profitability	0.09	0.07
Earn. Var.	0.07	0.10
Div. Yield	0.00	0.04
Growth	−0.07	0.07
Liquidity	−0.03	0.04

Source: Annualized data from August 31, 2010 to December 31, 2017 (live index history).

our study period, they reduced the index risks compared to those of the US parent index, as we saw in both the emerging markets and the developed markets (ex USA) indexes.

CONCLUSION

Surveys of institutional investors focusing on how they integrate ESG into their portfolios provide two key insights. First, most are focused on integrating ESG for financial reasons; that is, they seek better risk-adjusted returns over the long term without upsetting the investment strategy and factor allocation of their existing portfolios. Second, except for some leading asset owners who have integrated ESG across most or even all of their assets, the majority of investors currently do not integrate ESG across all their portfolios, nor do they apply a consistent approach in different types of allocations.

One way that asset owners can implement ESG integration is through index-based allocations to portfolios that seek to replicate ESG indexes. As with any index-based strategy, index-based approaches offer consistency, transparency, and replicability and are generally cost-effective. In our seven-year study period, we showed how global and regional versions of the MSCI ESG Leaders Indexes (as proxies for these regional allocations) resulted in significant regional variations in their respective ESG profiles and performance. However, in all instances, we showed a clear reduction in all key risk measures.

E X H I B I T 1 4

Overweights, Underweights, and Impaired Returns of MSCI USA ESG Leaders Index
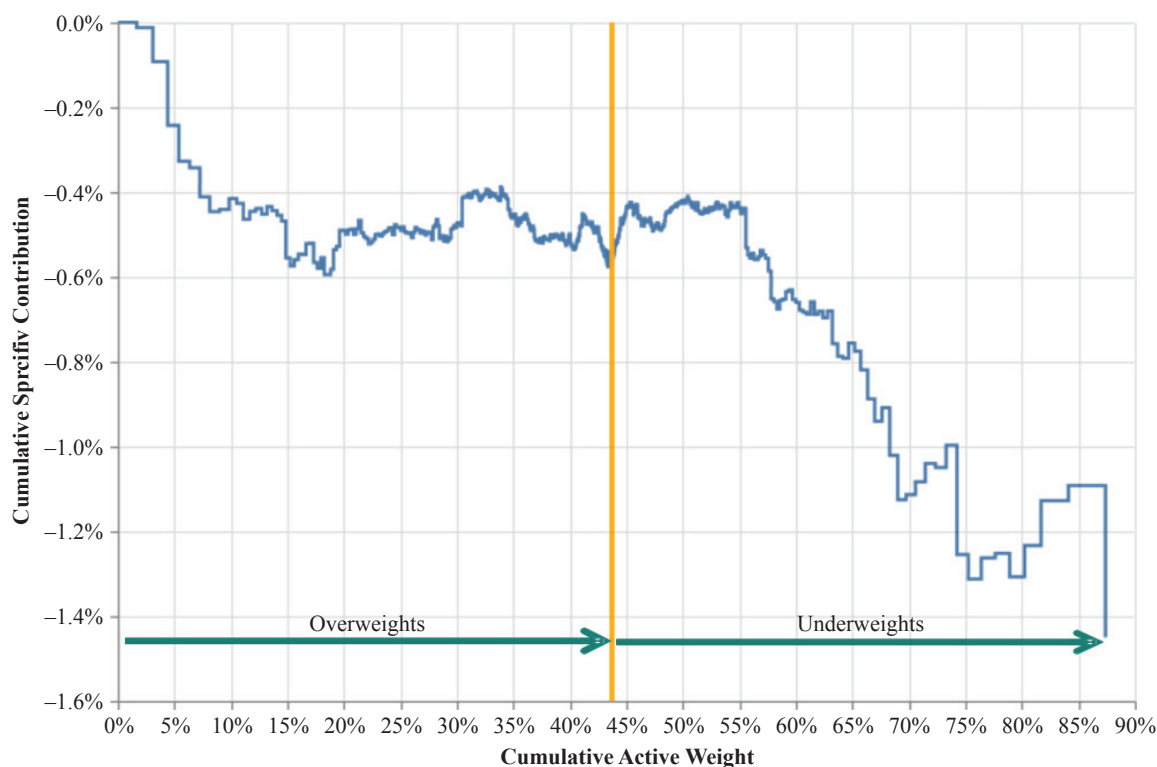
Sources: Data from August 31, 2010 to December 31, 2017 (live index history). This exhibit shows the cumulative annualized specific performance contribution of MSCI USA ESG Leaders Index versus cumulative average overweights and underweights (index components are sorted from largest to smallest active weight).

E X H I B I T 1 5

Seven Largest Contributors to Negative Stock-Specific Performance

Asset Name	Periods in Portfolio	Average Active Weight	Annualized Stock-Specific Performance Contribution
Apple Inc.	0	−3.28%	−0.35%
Amazon.com Inc.	0	−0.95%	−0.25%
IBM	87	1.32%	−0.15%
Facebook Inc.	0	−0.69%	−0.11%
Home Depot Inc.	0	−0.71%	−0.10%
Walt Disney Co.	30	−0.16%	−0.09%
Hewlett-Packard Co.	87	0.37%	−0.08%

Source: Data from August 31, 2010 to December 31, 2017.

At a global level, ESG integration led to a reduction in risk and showed a slight positive performance impact.

At the regional level, differences in returns and ESG exposure varied:

- While the emerging markets average ESG scores were relatively low and only a few companies had very high ESG scores, most of the observed out-performance came from selecting ESG leaders.

- The situation in the World ex USA region was reversed: Average ESG scores were fairly high, with relatively few companies' scores ranging far below the average. However, most of the outperformance came from avoiding these ESG laggards.
- In the United States, the exclusion of a handful of large-cap companies (largely in the tech sector) that experienced strong performance and the inclusion of other large-cap laggards impaired performance.

These regional differences show that excluding companies with low ESG ratings was not a guarantee for outperformance—in the US tech sector, it actually would have led to underperformance in the roughly seven-year period ending on December 31, 2017, in contrast to regions outside the United States. Index ESG methodologies—whether used on a global or regional basis—could have added downside protection.

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