RAFI™ Multi-Factor Climate Transition Index Series
Attribution Summary: Q4 2023

Developed

Performance Analysis	QTD Return	QTD Excess Return	YTD Return	1-Year Return	Carbon Intensity (CF/EVIC)
RAFI Multi-Factor Climate Transition Developed Index	10.85%	-0.62%	16.67%	16.67%	25.4
RAFI Multi-Factor ex Size Developed	9.54%	-1.93%	15.13%	15.13%	86.2
Solactive GBS Dev Markets Large/Mid Cap Index	*11.48%*	---	*24.55%*	*24.55%*	*43.9*
Factor Attribution	**QTD Return**	**QTD Excess Return**	**YTD Return**	**1-Year Return**	**Carbon Intensity (CF/EVIC)**
RAFI Value Factor Developed	7.03%	-4.4%	16.5%	16.49%	232.6
RAFI Low Volatility Factor Developed	6.80%	-4.7%	7.0%	7.00%	46.3
RAFI Quality Factor Developed	11.33%	-0.1%	18.2%	18.21%	35.0
RA Momentum Factor Developed	12.00%	0.5%	16.4%	16.43%	56.5

The RAFI Multi-Factor Climate Transition Developed Index lagged the cap-weight reference benchmark by 7.89% in 2023. Markets surprised to the upside with strong performance across the board with developed markets, and US Technology in particular, leading. Global equity markets had faced a variety of headwinds entering 2023 from continued energy uncertainty, generationally large post-covid inflationary shocks and deglobalization. China's reopening was anticipated to be a small fillip in the face of this uncertainty. What played out was the inverse of those fears. Energy went from the leading sector of 2022 to a laggard, diminished by subdued global demand and a remarkable renaissance in shale. Inflation steadily eased lower globally. And China's reopening boom failed to show up, while the rest of the emerging markets performed strongly.

Arguably the most significant surprise of 2023 took place in November 2022 with the announcement of ChatGPT. Mega-cap technology firm valuations took a beating in 2022 as the 'switch to the digital economy' sputtered out. The incipient AI revolution (and reigning covid-era in hiring excesses) offered a fresh growth story that propelled these firms through 2023. The Magnificent 7 (Apple, Microsoft, Alphabet, Amazon, Nvidia, Meta, Tesla) started the year with a raucous January and kept on rolling, accounting for 85% of the S&P 500's returns through September, ending the year as 28.1% by weight of the S&P 500. As tighter conditions weighed on Main Street, Silicon Valley's kings seemed to be an oasis of growth. Only near the tail end of the year, did we see broader breakout with prospects of a soft-landing in the US, a revitalized Japanese equity market and vibrant emerging markets (excluding China's geopolitical risk.)

The violent return back to the concentrated growth markets of COVID created a difficult environment for diversified factor sleeves (or any strategy that leaned out of the Magnificent 7) in 2023. Low Volatility, in particular, struggled in 2023 with the factor sleeve trailing the market-cap benchmark by 1755 bps. The low volatility strategy naturally leans into consumer

non-cyclicals, which impacted performance as consumers processed inflated staples and tighter labor markets. Value lagged by 806 bps as recession fears weighed on the broader market in favor of the AI growth story (the MSCI World Value Index trailed the MSCI World Growth Index by 2490 bps.) The momentum factor struggled both due to the narrowness of the advance as well as momentum crash in January as the formerly high momentum 'value' stocks turned over (the momentum factor sleeve experienced its worst quarter of the year in Q1, trailing the index by 516 bps.) Despite positive performance in Q4, the momentum sleeve fell behind the index by 812 bps over the year. Quality muddled through despite the broader preference for speculative large-cap growth. Quality trailed the index by 634 bps.

The climate transition strategy outperformed a comparable unconstrained strategy by 154 bps in 2023. The constrained strategy benefitted from greater weights to Technology and Communications relative to the unconstrained multi-factor strategy. The carbon tilt also led to larger weights in both Meta Platforms and Apple which added 74 bps and 17 bps, respectively, relative to the unconstrained strategy. A constrained strategy took a small 14 bps drag from a carbon intensity induced tilt into healthcare relative to a comparable unconstrained strategy.

Stock Analysis

Top Five/Bottom Five Contributors to Excess Return

	Total Weight	Active Weight	2023 Return	Excess Return Contribution	Initial Factor Sleeve Weights			
					Value	Low Volatility	Quality	Momentum
Top Five Contributors to Return								
Booking	1.33%	1.13%	76.02%	0.48%	—	—	0.21%	0.09%
Novo Nordisk	1.64%	1.13%	55.63%	0.32%	—	0.28%	0.31%	0.25%
Exxon Mobil	0.00%	-0.83%	-6.24%	0.27%	0.71%	—	—	0.27%
Eli Lilly	1.54%	0.81%	60.91%	0.26%	—	0.31%	0.31%	0.35%
United Health Group	0.08%	-0.79%	0.79%	0.19%	—	—	—	0.17%
Bottom Five Contributors to Return								
Nvidia	1.17%	-0.44%	239.02%	-1.40%	—	—	—	0.45%
Microsoft	0.00%	-4.30%	58.19%	-1.20%	—	—	—	—
Amazon	0.00%	-2.03%	80.88%	-0.86%	—	—	—	0.03%
Apple	2.20%	-2.70%	49.00%	-0.80%	—	—	0.72%	0.37%
Alphabet	0.00%	-2.48%	58.56%	-0.69%	—	—	—	—

Note: RAFI Multi-Factor Climate Transition Index dynamically tilts securities weights as a function of carbon intensity. Sleeve weights may not perfectly map to the final portfolio weight.

Underlining the narrowness of the market and the impact of a select few names, the Magnificent 7 were the 6 largest detractors from performance in 2023 (with Meta as the exception.) The average return across the group was 111% with Nvidia, Meta and Tesla all earnings greater than 100% returns. Nvidia was the standout performer across global equity markets posting a 239% return for 2023. Nvidia creates the pick and shovels that power the AI revolution through their GPUs and specialized AI code libraries. We dive deeper into Nvidia' positioning and the AI revolution writ large in our piece, The Nvidia/AI Singularity: Breakthrough, Bubble or Both.

Nvidia was the largest detractor removing 140 bps from performance on a -0.44% underweight. The strategy picked up offsetting exposure through the momentum factor sleeve.

As a consequence of the carbon tilting process, the strategy benefitted form several large contributors over the year. The index added 48 bps to performance from its stake in Booking, as 'revenge travel' took the world by storm. The strategy also benefitted by increased weights to pharmaceutical giants Novo Nordisk (contributed 32 bps to excess returns) and Eli Lilly (added 26 bps to excess returns) as promising new weight loss drugs were brought to market. Notably, the carbon constrained index benefited by avoiding Exxon Mobil despite favorable valuation and momentum signals. Leaning out of Exxon Mobil added 27 bps to performance.

Sector Analysis

12/30/2022 to 12/29/2023	RAFI Multi-Factor Climate Transition Developed Index		Solactive GBS Developed Markets Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	16.35	100.00	24.56	-2.97	-5.23	-8.21
Basic Materials	3.66	19.59	4.42	16.61	0.09	0.13	0.22
Communications	8.74	25.17	7.51	45.85	0.15	-1.44	-1.29
Consumer Cyclical	10.77	26.75	10.48	37.19	0.05	-1.05	-1.00
Consumer Non-Cyclical	11.59	0.86	7.86	3.54	-0.83	-0.38	-1.21
Energy	3.61	-0.81	4.96	2.87	0.18	-0.12	0.06
Financials	12.78	19.22	13.38	18.29	0.08	0.14	0.22
Healthcare	19.05	5.84	13.10	4.65	-1.28	0.23	-1.05
Industrial	10.29	19.11	10.05	21.45	-0.03	-0.24	-0.27
Real Estate	0.82	9.42	2.26	11.18	0.19	-0.02	0.17
Technology	17.01	32.79	23.20	54.40	-1.86	-2.70	-4.56
Utilities	1.69	12.17	2.79	0.79	0.29	0.21	0.50

Decomposing performance by sector, Technology, Communications and Consumer Cyclicals were intuitively among the largest detractors from performance this year, removing 456 bps, 129 bps and 100 bps, respectively from performance. Performance within these sectors was largely driven by their corresponding Magnificent 7 members.

Within Technology, Nvidia (-0.4% underweight), Microsoft (-4.3% underweight) and Apple (-2.7% underweight) were the largest detractors within the segment removing 140 bps, 120 bps, and 80 bps, respectively. Microsoft thrived this year as the major backer of OpenAI, the inventors of Chat GPT. Apple continued its impressive march though geopolitical risk has begun to weigh on the company. In the Communications sector, another AI competitor, Alphabet, detracted 69 bps from performance as its AI offering found its legs after a rocky introduction. While the strategy benefitted from a greater weight in Meta due to favorable carbon intensity,

that outperformance was offset by a tilt into AT&T. A 1.3% overweight to AT&T detracted 36 bps from performance. Amazon (-2.0% underweight) and Tesla (-1.1% underweight) drove performance in Consumer Cyclicals, detracting 86 bps and 51 bps, respectively.

Consumer Non-Cyclicals was the third largest detractor from performance. The 3.7% weight to non-cyclicals was primarily driven by low-volatility sleeve and accounted for 1.21% in relative underperformance to the benchmark. Performance was fairly diffuse within the segment. Relative to an unconstrained strategy, the index took a 5.95% overweight to Healthcare, which detracted 105 bps from performance this quarter. Healthcare names have been impacted by the end of covid subsidies though new insulin inhibitor drugs may have a massive impact on the space. Pfizer was the largest detractor in the segment with a 0.48% overweight removing 44 bps from performance as covid related sales declined.

Geographic Analysis

12/30/2022 to 12/29/2023	RAFI Multi-Factor Climate Transition Developed Index		Solactive GBS Developed Markets Large & Mid Cap Index		Attribution Analysis		
	Port. Average Weight	Port. Total Return	Bench. Average Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	16.35	100.00	24.56	-0.50	-7.70	-8.21
Developed Asia Pacific x JP	2.89	0.05	3.55	6.62	0.12	-0.21	-0.09
Europe - Non-EU	7.42	20.58	4.67	20.27	-0.13	0.01	-0.12
European Union	11.55	25.21	9.58	24.29	-0.09	0.10	0.01
Japan	9.32	14.54	6.97	20.37	-0.13	-0.56	-0.69
United Kingdom	5.20	15.56	4.24	13.86	-0.10	0.10	0.00
United States	60.37	15.50	66.80	27.64	-0.22	-7.25	-7.47
Other Developed	3.24	18.83	3.79	15.53	0.07	0.09	0.16
Other	--	--	0.19	8.84	0.03	--	0.03
[Unassigned]	0.00	--	0.19	50.11	-0.04	-0.00	-0.04

At the regional level, positioning relative to American technology was the most significant decision the portfolio made. The United States was the largest detractor to the portfolio removing 747 bps from excess returns. While the strategy took on average a -6.4% underweight to relatively pricey American capital markets, security selection rather than allocation effects accounted for the bulk of performance (-725 bps in selection effects.) All other regions lagged the market-cap benchmark though the EU and Japan enjoyed notably strong years up 24.3% and 20.4%, respectively. The Japan allocation detracted 69 bps from excess return in 2023. The EU segment added 1 bp to excess return, driven by security selection.

Rebalance Analysis

The following table lists the top five largest stocks by cap-weight that failed to make it into the index at the 12/15/2023 rebalance due to their factor scores or carbon tilting. Cumulative-weight rank represents each stock's position by weight within each factor sleeve prior to selection; value, low volatility, and quality select the top 25% of stocks by RAFI weight, and momentum selects the top 50% of stocks by market capitalization. Exxon Mobil and Berkshire Hathaway notably qualify for our standard RAFI Multi-Factor strategy but are excluded from the CTI index due to their carbon intensity.

			Cumulative Weight Rank			
Company	Region	Cap-Weight (12/31/2023)	Value	Low Volatility	Quality	Momentum
Microsoft	US	4.72%	97.7%	63.7%	28.5%	50.2%
Alphabet	US	2.67%	83.8%	50.0%	32.7%	54.3%
Amazon	US	2.34%	94.2%	52.3%	95.9%	42.3%
Tesla, Inc.	US	1.17%	99.8%	96.5%	86.9%	56.3%
UnitedHealth	US	0.84%	76.2%	30.6%	43.0%	72.5%

Important Information

Past performance is not indicative of future results. Certain performance information presented represents simulated performance or performance based on combined simulated index data (pre-index launch) and live index data (post-index launch). Past simulated performance is no guarantee of future performance and does not represent actual performance of an investment product based on an index. No allowance has been made for trading costs, management fees, or other costs associated with asset management, as the information provided relates only to the index itself. Performance data includes reinvestment of all dividends and income. Indexes are unmanaged and cannot be invested in directly. Actual investment results will differ. The simulated data may have under- or over- compensated for the impact, if any, of certain market factors. Simulated returns may not reflect the impact that material economic and market factors might have had on an investor's decision making. Simulated data is subject to the fact that it is designed with the benefit of hindsight. Simulated returns carry the risk that actual performance is not as depicted is not due to inaccurate predictive modeling. Simulated returns cannot predict how an investment strategy will perform in the future. Investors may experience loss of all or some of their investment.

Past performance is not indicative of future results. Certain performance information presented represents simulated performance or performance based on combined simulated index data (pre-index launch) and live index data (post-index launch). Past simulated performance is no guarantee of future performance and does not represent actual performance of an investment product based on an index. No allowance has been made for trading costs, management fees, or other costs associated with asset management, as the information provided relates only to the index itself. Performance data includes reinvestment of all dividends and income. Indexes are unmanaged and cannot be invested in directly. Actual investment results will differ. The simulated data may have under- or over- compensated for the impact, if any, of certain market factors. Simulated returns may not reflect the impact that material economic and market factors might have had on an investor's decision making. Simulated data is subject to the fact that it is designed with the benefit of hindsight. Simulated returns carry the risk that actual performance is not as depicted is not due to inaccurate predictive modeling. Simulated returns cannot predict how an investment strategy will perform in the future. Investors may experience loss of all or some of their investment.

Any applicable financial instruments are not sponsored, promoted, sold or supported in any other manner by RI or Solactive AG nor does RI or Solactive AG offer any express or implicit guarantee or assurance either with regard to the results of using the Index and/or Index trade mark or the Index Price at any time or in any other respect. The Index is calculated and published by RI and Solactive AG. RI and Solactive AG use their best efforts to ensure that the Index is calculated correctly. Irrespective of their obligations towards Licensee, neither RI nor Solactive AG has any obligation to point out errors in the Index to third parties including but not limited to Licensee, investors and/or financial intermediaries of the financial instrument. Neither publication of the Index nor the licensing of the Index or Index trade mark for the purpose of use in connection with the financial instrument constitutes a recommendation by RI or Solactive AG to invest capital in said financial instrument nor does it in any way represent an assurance or opinion of RI or Solactive AG with regard to any investment in the financial instrument.

The trademarks Fundamental Index™, RAFI™, Research Affiliates Equity™, RAE™ and the Research Affiliates™ trademark and corporate name and all related logos are the exclusive intellectual property of Research Affiliates, LLC ("RA") and in some cases are registered trademarks in the U.S. and other countries. Various features of the Fundamental Index methodology, including an accounting data-based non-capitalization data processing system and method for creating and weighting an index of securities, are protected by various patents of RA. (See applicable US Patents, Patent Publications and protected trademarks located at https://www.researchaffiliates.com/legal/disclosures#patent-trademarks-and-copyrights, which are fully incorporated herein.) Any use of these trademarks, logos or patented methodologies without the prior written permission of RA is expressly prohibited. RA reserves the right to take any and all necessary action to preserve all of its rights, title, and interest in and to these marks or patents.

RI does not offer or provide investment advice or offer or sell any securities, commodities or derivative instruments or products. Any such business may only be conducted through registered or licensed entities and individuals permitted to do so within the respective jurisdiction and only in conjunction with the legally required disclosure documents and regulatory filings.

© 2024 RAFI Indices, LLC. All rights reserved. Duplication or dissemination prohibited without prior written permission.