

RAFI™ Fundamental Reduced Carbon Pathway Index Series Attribution Summary: 2023

Performance

Performance Analysis	QTD Return	QTD Excess Return	YTD Return	1-Year Return	Carbon Intensity (CF/Rev. \$M USD)
RAFI Fundamental Global Reduced Carbon Pathway 3.5% Index	10.09%	-0.99%	19.35%	19.35%	177.42
<i>Solactive GBS Global Markets Large & Mid Cap Index</i>	<i>11.08%</i>	<i>---</i>	<i>23.05%</i>	<i>23.05%</i>	<i>136.15</i>
RAFI Fundamental Global Reduced Carbon Pathway 3.5% GBP Hedged Index	12.36%	1.28%	25.04%	25.04%	177.42
<i>Solactive GBS Global Markets Large & Mid Cap Index</i>	<i>11.08%</i>	<i>---</i>	<i>23.05%</i>	<i>23.05%</i>	<i>136.15</i>
RAFI Fundamental Developed Custom Reduced Carbon Pathway 3.0% Index	10.27%	-1.21%	19.83%	19.83%	150.84
<i>Solactive GBS Developed Markets Large & Mid Cap Index</i>	<i>11.48%</i>	<i>---</i>	<i>24.55%</i>	<i>24.55%</i>	<i>118.31</i>
RAFI Fundamental Emerging Custom Reduced Carbon Pathway 3.0% Index	7.95%	-0.05%	14.77%	14.77%	417.14
<i>Solactive GBS Emerging Markets Large & Mid Cap Index</i>	<i>8.00%</i>	<i>---</i>	<i>12.04%</i>	<i>12.04%</i>	<i>290.33</i>

The RAFI Fundamental Reduced Carbon Pathway Index Series displayed mixed performance over the past year as growth-oriented names broadly outpaced value-oriented names. Of the four strategies comprising the index series, the RAFI Fundamental Emerging Custom Reduced Carbon Pathway 3.0% Index and RAFI Fundamental Global Reduced Carbon Pathway 3.5% GBP Hedged Index outpaced their benchmark for the year. Furthermore, the emerging markets index had the greatest outperformance, leading its benchmark by 2.7% (+14.8% for the year). The other two indices in the series trailed their cap-weighted benchmark, with the worst performer having been the RAFI Fundamental Developed Custom Reduced Pathway 3.0% Index (trailing its benchmark by 4.7%).

Global

The RAFI Fundamental Global Reduced Carbon Pathway 3.5% Index was up 19.4% for the year. While having posted strong performance, the strategy trailed its cap-weight benchmark by 3.7%. The year shaped up to be a reversal of 2022 when value broadly outperformed growth. The markets largely finished on a high note to close off the year, standing strong against the tough investing climate, which brought record rate hikes, geopolitical risk, mass layoffs, and fears of Covid variants.

Looking at the bottom five contributors to excess return, it is easy to see the main companies that dragged down the strategy's performance. All the bottom five contributors for the year were from the now all so famous and closely watched group of stocks collectively known as the “**Magnificent 7**”. The Mag 7 stocks which is comprised of NVIDIA, Microsoft, Amazon, Tesla, Apple, Alphabet, and Meta, all saw their stock prices go through the roof. Over the past year, the Mag 7 stocks were up an average of 111%. At the end of 2022, the Mag 7 had a combined market-cap of 6.8 trillion, while the Russell 1000 Index (ex-Mag 7) had a combined market-cap of 30.6 trillion. Fast forward to the end of this year, the market-cap of the Mag 7 was 11.8 trillion and the Russell 1000 Index (ex-Mag 7) was 31.5 trillion (+73% versus +13%).

The top detractor to excess return at 118 bps was NVIDIA (-1.3% active weight). The company's stock price ended up over 200% to end the year and saw its market-cap balloon from 360 billion, to 1.2 trillion dollars! NVIDIA's blockbuster performance was driven by the ChatGPT and generative AI craze which took the market by storm. The second largest detractor at 70 bps was Microsoft (-2.4% active weight). Similarly, as NVIDIA, Microsoft reaped the benefits from the AI craze. The company saw revenue from its cloud “Azure” segment leap. Besides Meta, the strategy suffered from having an underweight to these hi-flyers. Combined, the Mag 7 had an 8.4% underweight in the strategy versus the cap-weighted benchmark, which on average only experienced an average negative return in Q3 (down 1.3%).

Stock Analysis

Top Five/Bottom Five Contributors to Excess Return

	Portfolio Weight	Active Weight	2023 Return	Excess Return Contribution
Top Five Contributors to Return				
Intel	0.72%	0.49%	94.64%	0.30%
Petroleo	0.21%	0.17%	112.05%	0.12%
Meituan	0.03%	-0.10%	-53.14%	0.11%
Samsung	0.87%	0.45%	42.27%	0.08%
NextEra Energy	0.12%	-0.11%	-25.30%	0.07%
Bottom Five Contributors to Return				
NVIDIA	0.18%	-1.25%	239.02%	-1.18%
Microsoft	1.43%	-2.38%	58.19%	-0.70%
Amazon	0.69%	-1.11%	80.88%	-0.50%
Tesla	0.06%	-0.91%	101.72%	-0.45%
Apple	2.42%	-1.92%	49.00%	-0.44%

Sector Analysis

12/30/2022 to 12/29/2023	RAFI Fundamental Global Reduced Carbon Pathway 3.5% Index		Solactive GBS Global 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	19.33	100.00	23.06	-3.02	-0.71	-3.73
Basic Materials	7.25	17.27	5.01	14.11	-0.19	0.24	0.05
Communications	7.60	29.86	7.90	35.81	-0.07	-0.43	-0.50
Consumer Cyclical	9.57	25.07	10.61	32.64	-0.05	-0.69	-0.74
Consumer Non-Cyclical	8.20	5.35	7.66	3.76	-0.10	0.14	0.04
Energy	7.75	11.76	5.05	5.59	-0.51	0.56	0.05
Financials	20.60	18.80	14.35	17.30	-0.35	0.35	-0.00
Healthcare	9.50	0.81	12.10	4.43	0.52	-0.40	0.11
Industrial	9.71	22.66	9.55	20.73	-0.01	0.19	0.18
Real Estate	1.85	5.77	2.20	9.48	0.07	-0.08	-0.01
Technology	14.35	44.22	22.77	52.65	-2.14	-0.94	-3.08
Utilities	3.62	10.03	2.80	1.52	-0.18	0.35	0.17

At the sector level, underperformance of the strategy in 2023 relative to its cap-weighted benchmark was influenced by the Technology, Consumer Cyclical, and Communication sectors. Technology (-8.4% active weight) was the main detractor of excess return at 308 bps, with allocation effects outweighing selection effects. The Technology sector, which saw multiple rounds of mass layoffs, stood resilient, and flourished (largely driven by the US Tech giants). Global investors watched in amazement as the “tech proxy,” the NASDAQ Composite posted 3 positive quarters of double-digit returns (Q1+16.8%; Q2 +12.8%; Q4 +13.6%) and 1 negative quarter (Q3 -4.1%). The NASDAQ finished the year up an astounding 43%. The second largest detractor to excess return at 74 bps was Consumer Cyclical (-1.0% active weight). Performance within the sector was split between allocation and selection effects. Tesla (+101.7%) and Amazon (+80.9%) led the charge within the sector over the year. The third largest detractor was Communications

(-0.3% active weight). The sector detracted 50 bps of excess return, with Alphabet and Uber being the standouts.

Peeling apart the sectors of Russell 1000 Index and analyzing the top “winners”/ “losers” for the year, reveals huge performance dispersion amongst the winning and losing sectors. The top two sectors (Communication, Technology) were up over 55%, while the bottom two sectors finished negative (Energy -2.2%; Utilities -7.0%). Utilities, which has historically been a capital-intensive sector, struggled as high interest rates bowed down on borrowing cost.

Geographic Analysis

12/30/2022 to 12/29/2023	RAFI Fundamental Global Reduced Carbon Pathway 3.5% Index		Solactive GBS Global 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	19.33	100.00	23.06	-1.13	-2.60	-3.73
Developed Asia Pacific	13.63	17.84	9.36	15.30	-0.33	0.36	0.03
Developed Europe	23.28	21.50	16.39	20.77	-0.18	0.16	-0.03
Emerging Americas	1.45	43.81	1.02	34.33	0.04	0.12	0.16
Emerging Asia	9.89	15.15	8.91	10.29	-0.13	0.51	0.38
Emerging EMEA	1.17	9.74	1.59	8.64	0.07	0.01	0.09
United States	47.15	19.55	59.20	27.64	-0.57	-3.68	-4.25
Other Developed	3.44	13.27	3.36	15.53	0.01	-0.08	-0.07
[Unassigned]	0.00	--	0.18	49.26	-0.04	-0.00	-0.04

At the region level, it was no surprise the United States (-12.1% active weight) was the largest detractor over the year to excess return at 425 bps. The US region was predominantly responsible for the strategy’s performance drag versus its cap-weighted benchmark. As perviously mentioned, all of the companies that make up the “Magificent 7” excluding Meta negatively impacted performance. The stratgey did see some benefits via the Emerging Asia (1.0% active weight) and Emerging Americas (0.4% active weight) regions, but the excess return gained was eclipsed by the negative impact of the US.

Developed Stock Analysis

Top Five/Bottom Five Contributors to Excess Return

	Portfolio Weight	Active Weight	2023 Return	Excess Return Contribution
Top Five Contributors to Return				
Intel	0.81%	0.55%	94.64%	0.33%
Samsung	0.96%	0.96%	0.00%	0.16%
NextEra Energy	0.13%	-0.13%	-25.30%	0.08%
SK hynix	0.17%	0.17%	0.00%	0.08%
Charles Schwab	0.07%	-0.10%	-15.96%	0.08%
Bottom Five Contributors to Return				
NVIDIA	0.20%	-1.41%	239.02%	-1.32%
Microsoft	1.60%	-2.70%	58.19%	-0.76%
Amazon	0.77%	-1.25%	80.88%	-0.56%
Tesla	0.07%	-1.03%	101.72%	-0.50%
Apple	2.69%	-2.21%	49.00%	-0.45%

Sector Attribution

12/30/2022 to 12/29/2023	RAFI Fundamental Developed Custom Reduced Carbon Pathway 3.0% 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	19.79	100.00	24.56	-3.21	-1.56	-4.77
Basic Materials	6.61	19.50	4.42	16.61	-0.17	0.20	0.03
Communications	7.48	34.34	7.51	45.85	-0.05	-0.76	-0.81
Consumer Cyclical	9.67	27.66	10.48	37.19	-0.05	-0.86	-0.91
Consumer Non-Cyclical	8.55	5.01	7.86	3.54	-0.14	0.14	-0.01
Energy	7.62	8.11	4.96	2.87	-0.63	0.49	-0.14
Financials	19.73	19.67	13.38	18.29	-0.38	0.32	-0.06
Healthcare	10.44	0.46	13.10	4.65	0.57	-0.52	0.05
Industrial	10.24	23.32	10.05	21.45	-0.01	0.20	0.19
Real Estate	1.69	14.50	2.26	11.18	0.10	0.06	0.16
Technology	14.34	44.47	23.20	54.40	-2.24	-1.13	-3.37
Utilities	3.63	8.01	2.79	0.79	-0.21	0.30	0.09

Country Attribution

12/30/2022 to 12/29/2023	RAFI Fundamental Developed Custom Reduced Carbon Pathway 3.0% 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	19.79	100.00	24.56	-1.38	-3.40	-4.77
Developed Asia Pacific x JP	3.42	6.63	3.55	6.62	0.04	-0.01	0.03
Europe - Non-EU	4.58	20.08	4.67	20.27	0.00	-0.02	-0.02
European Union	14.53	25.15	9.58	24.29	-0.05	0.13	0.08
Japan	11.64	21.38	6.97	20.37	-0.20	0.12	-0.08
Other	2.70	28.82	0.19	8.84	-0.39	0.53	0.14
Other Developed	3.85	13.29	3.79	15.53	0.01	-0.09	-0.08
United Kingdom	6.80	14.56	4.24	13.86	-0.28	0.04	-0.24
United States	52.48	19.63	66.80	27.64	-0.47	-4.11	-4.58
[Unassigned]	0.00	0.00	0.19	50.11	-0.04	-0.00	-0.04

Emerging Markets

Stock Analysis

Top Five/Bottom Five Contributors to Excess Return

	Portfolio Weight	Active Weight	2023 Return	Excess Return Contribution
Top Five Contributors to Return				
Meituan	0.29%	-0.83%	-53.14%	0.77%
Banco do Brasil	0.66%	0.54%	91.39%	0.33%
Tencent	2.30%	-1.55%	-6.89%	0.32%
Wuxi Biologics	0.00%	-0.32%	-50.57%	0.27%
Li-Ning	0.00%	-0.20%	-68.51%	0.25%
Bottom Five Contributors to Return				
Samsung	0.00%	-4.14%	39.83%	-1.05%
Taiwan Semiconductor Manufacturing	3.58%	-2.51%	35.18%	-0.57%
Ping An Insurance (Group) Company of China	1.87%	1.24%	-26.23%	-0.51%
Country Garden	0.29%	0.26%	-70.80%	-0.40%
SK hynix	0.00%	-0.63%	87.23%	-0.36%

Sector Attribution

12/30/2022 to 12/29/2023	RAFI Fundamental Emerging Custom Reduced Carbon Pathway 3.0% Index		Solactive GBS Emerging 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	14.92	100.00	12.01	-0.11	3.03	2.92
Basic Materials	12.02	5.82	9.55	5.59	-0.15	0.04	-0.12
Communications	8.28	1.01	10.88	-7.68	0.60	0.82	1.41
Consumer Cyclical	9.11	2.02	11.68	5.20	0.19	-0.32	-0.13
Consumer Non-Cyclical	5.12	9.04	6.13	5.68	0.07	0.18	0.25
Energy	8.84	43.82	5.78	24.90	0.34	1.45	1.79
Financials	28.36	12.47	21.89	12.74	0.06	-0.09	-0.03
Healthcare	1.55	13.34	4.34	-0.50	0.38	0.23	0.60
Industrial	5.24	14.58	5.64	11.16	0.00	0.17	0.17
Real Estate	3.27	-29.57	1.74	-6.93	-0.34	-0.99	-1.33
Technology	14.50	43.14	19.46	37.20	-1.22	0.77	-0.45
Utilities	3.73	27.83	2.89	6.06	-0.03	0.77	0.74

Country Attribution

12/30/2022 to 12/29/2023	RAFI Fundamental Emerging Custom Reduced Carbon Pathway 3.0% Index		Solactive GBS Emerging 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	14.92	100.00	12.01	-1.69	4.60	2.92
Brazil	10.73	47.11	5.63	36.37	1.17	0.91	2.08
China	35.17	-6.13	28.17	-9.52	-1.64	1.45	-0.19
Emerging Europe	4.12	19.71	1.85	10.36	-0.06	0.36	0.30
India	13.66	36.63	15.78	24.37	-0.30	1.46	1.16
Latin America x Brazil	3.72	32.16	3.36	31.55	0.09	0.03	0.12
Middle East and Africa	7.44	4.97	11.38	6.12	0.25	-0.07	0.18
Other	0.05	-17.83	0.28	-15.45	0.06	0.00	0.07
South Korea	--	--	12.19	25.61	-1.56	--	-1.56
Southeast Asia	25.11	23.37	21.31	21.58	0.31	0.46	0.77
[Unassigned]	0.00	--	0.04	35.41	-0.01	0.00	-0.01

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