

RAFI[®] Multi-Factor Index Series

Performance Commentary: Q3 2018

United States

United States	QTD Return	6/30/2018 Allocation	Contribution to Return	9/30/2018 Allocation
RAFI Dynamic Multi-Factor US Index	6.33%	---	---	---
RAFI Multi-Factor US Index	6.51%	---	---	---
<i>Russell 3000 Index</i>	<i>7.12%</i>	<i>---</i>	<i>---</i>	<i>---</i>
RAFI Value Factor US Index	5.31%	26.9%	1.43%	23.9%
RAFI Low Volatility Factor US Index	8.71%	7.6%	0.66%	9.3%
RAFI Quality Factor US Index	7.74%	21.3%	1.65%	22.9%
RA Momentum Factor US Index	7.27%	25.6%	1.86%	23.5%
<i>Russell 1000 Index</i>	<i>7.42%</i>	<i>---</i>	<i>---</i>	<i>---</i>
RAFI Size Factor US Index	4.04%	18.5%	0.75%	20.3%
<i>Russell 2000 Index</i>	<i>3.58%</i>	<i>---</i>	<i>---</i>	<i>---</i>

RAFI® Dynamic Multi-Factor US Index underperformed the Russell 3000 Index by a 79bps for the quarter. Individual factor performance was quite dispersed with the RAFI Value Factor US Index underperforming its benchmark by 211bps, while the RAFI Low Volatility Factor US Index outperformed by 129bps.

Attribution Results

From a stock-level perspective, the five biggest contributors to excess return were CVS, Express Scripts, Wells Fargo, Target, and Facebook. The following table illustrates each stock's total weight, active weight, contribution to return, and individual factor-sleeve weight. Wells Fargo is the only company among the top five contributors that doesn't qualify for the index due to poor factor scores. It was down 4.5% for the quarter, continuing its slide for the year, having depreciated approximately 13.0% since the beginning of the year.

Top Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
CVS Health Corp.	1.35%	1.10%	23.26%	0.16%	1.05%	0.28%	—	—
Express Scripts	0.91%	0.75%	23.05%	0.11%	0.72%	0.21%	—	0.12%
Wells Fargo	0.00%	-0.86%	-4.50%	0.09%	—	—	—	—
Target	1.22%	1.07%	16.78%	0.09%	0.72%	0.19%	0.53%	0.11%
Facebook	1.14%	-0.34%	-15.37%	0.08%	1.10%	—	—	—

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

A large underweight to Apple was by far the biggest detractor to excess return, at 31bps. The company qualified for the Quality factor index only. At the 9/30 rebalance, the company remained in the Quality factor index and entered the Momentum factor index, reducing the underweight from 228bps to 121bps.

Bottom Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
Apple	1.20%	-2.28%	22.38%	-0.31%	—	—	1.18%	—
Seagate Technology	0.51%	0.51%	-15.05%	-0.12%	0.28%	—	0.20%	0.04%
Microsoft	1.39%	-1.41%	16.43%	-0.12%	—	—	—	1.35%
Amazon	1.47%	-1.14%	17.84%	-0.11%	1.42%	—	—	—
Pfizer	0.00%	-0.80%	22.51%	-0.11%	—	—	—	—

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

The Technology and Consumer, Cyclical sectors were the biggest detractors to return at -49 bps and -36 bps, respectively. Meanwhile, the Financial and Consumer, Non-Cyclical sectors were the biggest contributors to excess return at 25 bps and 8 bps, respectively. The following table displays the portfolio's sector representation at the beginning and end of the quarter. The sector-level effect on return is shown in the far right column.

	RAFI Dynamic Multi-Factor US Index			Russell 3000			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	6.44	100.00	100.00	7.12	-0.50	-0.19	-0.68
Basic Materials	4.21	4.72	2.22	3.70	3.48	0.68	-0.07	0.07	0.00
Consumer, Cyclical	21.49	21.58	5.15	14.42	14.43	6.73	-0.03	-0.33	-0.36
Amazon.com, Inc.	1.74	1.54	17.84	2.47	2.74	17.84	-0.11	--	-0.11
General Motors Company	0.50	0.55	-13.60	0.18	0.15	-13.60	-0.10	--	-0.10
Ford Motor Company	0.40	0.44	-15.25	0.15	0.12	-15.25	-0.09	--	-0.09
Twenty-First Century Fox	0.61	0.75	-6.39	0.19	0.16	-6.39	-0.08	--	-0.08
Consumer, Non-Cyclical	9.83	9.31	6.68	6.78	6.61	5.32	-0.04	0.12	0.08
Keurig Dr Pepper Inc.	0.21	0.03	7.79	0.08	0.01	7.79	0.01	--	0.01
Fluor Corporation	0.11	0.16	19.54	0.02	0.03	19.54	0.01	--	0.01
Kraft Heinz Company	--	--	--	0.14	0.11	-11.36	0.02	--	0.02
CVS Health Corporation	1.13	1.47	23.26	0.23	0.27	23.26	0.16	--	0.16
Energy	7.53	11.47	3.84	5.99	5.68	0.68	-0.31	0.37	0.06
Financial	14.32	11.59	3.42	18.45	17.66	3.17	0.24	0.01	0.25
Bank of America Corp	0.80	--	0.32	0.95	0.92	5.01	0.02	--	0.02
State Street Corporation	0.10	--	1.00	0.12	0.11	-9.50	0.02	--	0.02
Bank of New York Mellon C	--	--	--	0.18	0.16	-4.96	0.02	--	0.02
Wells Fargo & Company	--	--	--	0.87	0.77	-4.50	0.09	--	0.09
Health care	9.24	9.26	12.77	13.28	14.11	13.44	-0.28	-0.06	-0.33
Industrial	10.77	10.45	9.53	8.57	8.78	9.90	0.04	-0.04	0.00
Technology	18.26	16.71	7.03	23.48	23.97	9.24	-0.13	-0.36	-0.49
Apple Inc.	1.22	1.29	22.38	3.25	3.67	22.38	-0.31	--	-0.31
Seagate Technology PLC	0.45	0.44	-15.05	--	--	--	-0.12	--	-0.12
Microsoft Corporation	1.63	1.45	16.43	2.67	2.92	16.43	-0.12	--	-0.12
Advanced Micro Devices, I	--	--	--	0.05	0.09	106.07	-0.05	--	-0.05
Telecommunications	3.00	3.22	10.95	2.43	2.50	10.72	0.03	0.01	0.03
Utilities	1.36	1.68	3.22	2.90	2.78	2.50	0.05	0.01	0.06

Current Positioning

At the 9/30 rebalance, no large shifts in factor allocations occurred for the index. The biggest shift in factor exposure was a 3.0% decrease in Value. Low Volatility, Quality, and Size all increased approximately 1.7%

- » **Value** continues to remain the largest factor allocation, at approximately 24%, despite a 3.0% decrease in allocation for the quarter. At the 9/30 rebalance, Value had the second-best reversal score (-54% vs. -56% average) and the second-best momentum score (+19% vs. +17% average) relative to the other factors. However, reversal and momentum scores for most factors were much less dispersed this quarter, except for momentum for Low Volatility which continues to be poor (+10% vs. +17% average)

Note: The reversal score is measured as the past five year's performance excluding the most recent year. For purposes of calculating the reversal score the sign is reversed. For example, if a factor's reversal score is -25 that would mean it was up 25% over the measurement period. The momentum score is measured as the past one year's performance excluding the most recent month.

The following table lists the top five largest stocks by cap-weight that failed to make it into the index at the 9/30 rebalance due to their factor scores. 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.

Company	Region	Cap-Weight (9/30/2018)	Cumulative Weight Rank			
			Value	Low Volatility	Quality	Momentum
Berkshire Hathaway	US	1.40%	75.5%	34.4%	87.4%	60.7%
Facebook	US	1.30%	99.5%	89.7%	59.3%	83.6%
JPMorgan Chase	US	1.27%	65.9%	85.8%	78.5%	53.6%
Alphabet	US	1.22%	98.4%	76.0%	48.0%	47.5%
Bank of America	US	0.93%	79.4%	95.4%	81.3%	56.7%

Developed

Developed	QTD Return	6/30/2018 Allocation	Contribution to Return	9/30/2018 Allocation
RAFI Dynamic Multi-Factor Developed Index	3.86%	---	---	---
RAFI Multi-Factor Developed Index	3.99%	---	---	---
<i>FTSE All Cap Developed</i>	<i>4.64%</i>	<i>---</i>	<i>---</i>	<i>---</i>
<i>MSCI World All Cap</i>	<i>4.61%</i>	<i>---</i>	<i>---</i>	<i>---</i>
RAFI Value Factor Developed Index	3.49%	25.1%	0.88%	21.9%
RAFI Low Volatility Factor Developed Index	5.10%	12.4%	0.63%	16.1%
RAFI Quality Factor Developed Index	4.58%	19.9%	0.91%	21.4%
RA Momentum Factor Developed Index	4.29%	24.3%	1.04%	22.5%
<i>FTSE AW Developed</i>	<i>4.91%</i>	<i>---</i>	<i>---</i>	<i>---</i>
<i>MSCI The World Index</i>	<i>5.10%</i>	<i>---</i>	<i>---</i>	<i>---</i>
RAFI Size Factor Developed Index	1.96%	18.3%	0.36%	18.1%
<i>FTSE Small Cap Developed</i>	<i>2.73%</i>	<i>---</i>	<i>---</i>	<i>---</i>
<i>MSCI The World Index Small Cap</i>	<i>2.05%</i>	<i>---</i>	<i>---</i>	<i>---</i>

The RAFI Dynamic Multi-Factor Developed Index underperformed the MSCI World All Cap Index by 75bps for the quarter. All single-factor strategies underperformed their benchmarks for the quarter except for the RAFI Low Volatility Factor Developed Index which matched its benchmarks performance.

Attribution Results

From a stock-level perspective, the five biggest contributors to excess return were Facebook, CVS, Target, Express Scripts, and Bayer. The following table illustrates each stock's total weight, active weight, contribution to return, and individual factor-sleeve weight. Facebook was the single largest contributor to returns. During the quarter, Facebook only qualified for the Momentum index and was an underweight of 46bps. The stock was down over 15% for the quarter. At the 9/30 rebalance, Facebook failed to qualify for the Momentum index and has exited the index entirely.

Top Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
Facebook	0.58%	-0.46%	-15.37%	0.10%	—	—	—	0.52%
CVS Health Corp.	0.70%	0.52%	23.26%	0.09%	0.50%	0.23%	—	—
Target	0.79%	0.68%	16.78%	0.07%	0.34%	0.15%	0.25%	0.05%
Express Scripts	0.55%	0.44%	23.05%	0.07%	0.34%	0.17%	—	0.06%
Bayer	0.00%	-0.21%	-19.33%	0.06%	—	—	—	—

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

When examining the bottom five contributors to excess return, as in past quarters, the list continues to be driven by technology companies. Many of these companies exhibit the traditional characteristics of growth-oriented tech companies: high investment, trading at lofty multiples, and having volatile price movements. These characteristics make for poor companies from the quality, value, and low volatility perspectives, and typically fail to make it into those indices, resulting in a low overall index weight.

Bottom Five Contributors to Excess Return

	Total	Active	Q3 2018	Excess Return	Contribution to Overall Index Weight			
	Weight	Weight	Return	Contribution	Value	Low Volatility	Quality	Momentum
Apple	0.62%	0.62%	22.38%	-0.29%	—	—	0.56%	—
Amazon	0.76%	-1.11%	17.84%	-0.13%	—	—	—	0.68%
Microsoft	0.72%	-1.16%	16.43%	-0.12%	—	—	—	0.64%
Pfizer	0.00%	-0.54%	22.51%	-0.08%	—	—	—	—
Seagate Technology	0.27%	0.24%	-15.05%	-0.05%	0.13%	—	0.10%	0.02%

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

From a sector perspective, Technology and Health Care were the biggest detractors to return at -46 bps and -36 bps, respectively. Meanwhile, the Energy and Financial sectors were the biggest contributors to excess return at 15 bps each. The following table displays the portfolio's sector representation at the beginning and end of the quarter. The sector-level effect on return is shown in the far right column.

	RAFI Dynamic Multi-Factor Developed Index			iShares MSCI World ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	3.94	100.00	100.00	5.14	-0.57	-0.63	-1.20
Basic Materials	7.06	7.32	0.94	5.14	4.90	-0.12	-0.12	0.08	-0.05
Consumer, Cyclical	18.52	18.42	2.89	13.87	13.89	4.68	-0.02	-0.32	-0.35
Consumer, Non-Cyclical	12.02	11.70	2.19	9.17	8.84	2.41	-0.07	-0.03	-0.11
Energy	6.98	10.78	3.79	6.73	6.43	1.24	-0.12	0.27	0.15
Enbridge Inc.	--	--	--	0.16	0.14	-8.45	0.02	--	0.02
Marathon Petroleum Corpo	0.26	0.38	14.66	0.10	0.10	14.66	0.02	--	0.02
Schlumberger NV	--	--	--	0.21	0.19	-8.38	0.03	--	0.03
ConocoPhillips	0.50	0.85	11.63	0.21	0.22	11.63	0.04	--	0.04
Financial	16.35	13.06	2.22	19.90	19.38	2.35	0.18	-0.03	0.15
Intesa Sanpaolo S.p.A.	0.07	--	-1.31	0.11	0.09	-11.94	0.02	--	0.02
Westpac Banking Corporat	--	--	--	0.17	0.15	-6.65	0.02	--	0.02
HSCB Holdings Plc	0.37	0.04	-5.90	0.46	0.41	-5.90	0.04	--	0.04
Wells Fargo & Company	--	--	--	0.64	0.58	-4.50	0.06	--	0.06
Health care	8.14	8.30	9.93	11.92	12.63	11.40	-0.25	-0.11	-0.36
Pfizer Inc.	--	--	--	0.50	0.58	22.51	-0.08	--	-0.08
Eli Lilly and Company	--	--	--	0.20	0.25	26.45	-0.04	--	-0.04
Merck & Co., Inc.	0.07	0.09	17.67	0.40	0.45	17.67	-0.04	--	-0.04
Johnson & Johnson	0.58	0.49	14.63	0.79	0.87	14.63	-0.03	--	-0.03
Industrial	11.16	11.07	5.96	9.40	9.56	6.88	0.02	-0.10	-0.08
Technology	12.38	11.28	5.66	17.69	18.29	8.21	-0.18	-0.28	-0.46
Apple Inc.	0.63	0.67	22.38	2.34	2.73	22.38	-0.29	--	-0.29
Microsoft Corporation	0.85	0.75	16.43	1.77	1.96	16.43	-0.12	--	-0.12
Seagate Technology PLC	0.23	0.24	-15.05	0.04	0.03	-15.05	-0.05	--	-0.05
Oracle Corporation	--	--	--	0.33	0.37	17.48	-0.04	--	-0.04
Telecommunications	4.15	4.46	5.72	3.09	3.16	8.05	0.04	-0.10	-0.06
Utilities	3.22	3.59	0.19	3.08	2.93	0.65	-0.03	-0.01	-0.05

From a regional perspective, Germany was the top contributor to excess return, and the only region to contribute positively to excess return for the quarter. The United States was the main detractor, attributable mainly to technology stocks as previously mentioned.

	RAFI Dynamic Multi-Factor Developed Index			iShares MSCI World ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	3.94	100.00	100.00	5.14	-0.42	-0.79	-1.20
Canada	3.03	2.97	-0.68	3.48	3.32	0.65	0.01	-0.04	-0.03
EM ex BRIC	0.04	0.03	11.56	--	--	--	0.00	--	0.00
Europe (Other)	11.99	11.95	2.97	9.07	8.89	2.38	-0.08	0.07	-0.02
France	3.27	3.92	2.74	3.73	3.66	2.76	-0.00	-0.00	-0.00
Germany	3.17	3.34	1.22	3.36	3.20	-0.48	-0.00	0.06	0.05
Bayer AG	--	--	--	0.25	0.19	-19.33	0.06	--	0.06
Siemens AG	0.04	0.05	-3.05	0.25	0.23	-3.05	0.02	--	0.02
Japan	11.62	11.85	2.64	8.60	8.56	4.86	-0.01	-0.26	-0.27
Pacific ex Japan	4.86	4.56	-1.21	4.29	4.01	-0.70	-0.03	-0.03	-0.06
United Kingdom	8.46	7.70	-2.60	6.50	6.08	-1.83	-0.12	-0.07	-0.19
United States	53.55	53.67	6.45	60.97	62.27	7.46	-0.19	-0.51	-0.70
Apple Inc.	0.63	0.67	22.38	2.34	2.73	22.38	-0.29	--	-0.29
Amazon.com, Inc.	0.90	0.79	17.84	1.73	1.97	17.84	-0.13	--	-0.13
Microsoft Corporation	0.85	0.75	16.43	1.77	1.96	16.43	-0.12	--	-0.12
Pfizer Inc.	--	--	--	0.50	0.58	22.51	-0.08	--	-0.08
Seagate Technology	0.23	0.24	-15.05	0.04	0.03	-15.05	-0.05	--	-0.05

Current Positioning

At the 9/30 rebalance, the biggest shifts in factor allocation were a 3.7% increase to Low Volatility and a 3.2% decrease to Value.

- » **Low Volatility** – The large increase to Low Volatility was primarily driven by strong momentum scores in the Developed Europe ex UK (+6% vs. +1% average) and Japan (+8% vs. +5% average) regions.
- » **Value** – Value had the worst momentum and reversal scores in the Developed Europe ex UK region (-45% vs. -38% for average factor reversal score, and -1% vs. +1% average factor momentum score) as well as poor reversal (-26% vs. -24% average) and momentum (0% vs. +3% average) scores in the Developed Other regions.

Note: The reversal score is measured as the past five year's performance excluding the most recent year. For purposes of calculating the reversal score the sign is reversed. For example, if a factor's reversal score is -25 that would mean it was up 25% over the measurement period. The momentum score is measured as the past one year's performance excluding the most recent month.

The following table lists the top five largest stocks by cap-weight that failed to make it into the index at the 9/30 rebalance due to their factor scores. Cumulative-weight rank represents a 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.

Company	Region	Cap-Weight (9/30/2018)	Cumulative Weight Rank			
			Value	Low Volatility	Quality	Momentum
JPMorgan Chase	US	0.93%	65.9%	85.8%	78.5%	53.6%
Facebook	US	0.92%	99.5%	89.7%	59.3%	83.6%
Alphabet	US	0.87%	98.4%	76.0%	48.0%	47.5%
Bank of America	US	0.68%	79.4%	95.4%	81.3%	56.7%
Berkshire Hathaway	US	0.63%	75.5%	34.4%	87.4%	60.7%

Developed ex US

Developed ex U.S.	QTD Return	6/30/2018 Allocation	Contribution to Return	9/30/2018 Allocation
RAFI Dynamic Multi-Factor Developed ex US Index	1.23%	---	---	---
RAFI Multi-Factor Developed ex US Index	1.26%	---	---	---
<i>FTSE All Cap Developed ex U.S. Index</i>	<i>1.10%</i>	<i>---</i>	<i>---</i>	<i>---</i>
<i>MSCI World ex USA All Cap Index</i>	<i>1.01%</i>	<i>---</i>	<i>---</i>	<i>---</i>
RAFI Value Factor Developed ex US Index	1.66%	23.4%	0.39%	20.0%
RAFI Low Volatility Factor Developed ex US Index	2.04%	17.1%	0.35%	22.6%
RAFI Quality Factor Developed ex US Index	1.43%	18.6%	0.26%	20.0%
RA Momentum Factor Developed ex US Index	1.40%	23.0%	0.32%	21.5%
<i>FTSE All-World Developed ex U.S. Index</i>	<i>1.35%</i>	<i>---</i>	<i>---</i>	<i>---</i>
<i>MSCI World ex USA Index</i>	<i>1.38%</i>	<i>---</i>	<i>---</i>	<i>---</i>
RAFI Size Factor Developed ex US Index	-0.28%	18.0%	-0.05%	15.9%
<i>FTSE Small Cap Developed ex U.S. Index</i>	<i>-0.96%</i>	<i>---</i>	<i>---</i>	<i>---</i>
<i>MSCI World ex USA Small Cap Index</i>	<i>-0.78%</i>	<i>---</i>	<i>---</i>	<i>---</i>

The RAFI Dynamic Multi-Factor Developed ex US Index outperformed the MSCI World ex USA All Cap Index by 22bps for the quarter ending September 2018. All of the single-factor strategies outperformed their benchmarks for the quarter.

Attribution Results

From a stock-level perspective, the five largest contributors to performance were Bayer, HSBC, Ericsson, Medtronic, and British American Tobacco. Bayer, which does not qualify for any of the factor indices, was down 20% for the quarter, following its purchase of Monsanto in August. The following table illustrates each stock's total weight, active weight, contribution to return, and individual weight in the single-factor indices.

Top Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
Bayer	0.00%	-0.62%	-19.33%	0.15%	—	—	—	—
HSBC	0.09%	0.09%	-5.90%	0.08%	—	0.10%	—	0.01%
Ericsson	0.76%	0.59%	14.57%	0.08%	0.39%	0.06%	0.23%	0.07%
Medtronic	0.47%	0.47%	16.17%	0.06%	—	0.38%	—	—
British American Tobacco	0.25%	-0.56%	-7.56%	0.05%	—	0.12%	0.19%	—

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

The single largest detractor to excess return was Softbank, which was due to an approximately 40bps underweight relative to the benchmark. The company was up approximately 41% for the quarter.

Bottom Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
SoftBank	0.13%	-0.38%	40.57%	-0.12%	—	—	0.13%	—
Novartis	0.54%	-0.73%	13.97%	-0.08%	—	—	—	0.51%
Nestle	0.79%	-0.98%	8.16%	-0.06%	—	0.33%	0.38%	—
Sanofi	0.00%	-0.67%	10.94%	-0.06%	—	—	—	—
Roche	0.38%	-0.80%	9.58%	-0.06%	—	—	0.38%	—

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

From a sector perspective, the Financial and Energy sectors were the biggest contributors to excess return at 23 bps and 8 bps, respectively. Consumer, Cyclical and Consumer, Non-Cyclical were the biggest detractors at -21 bps and -15 bps, respectively. The following table displays the portfolio's sector representation at the beginning and end of the quarter. The sector-level effect on return is shown in the far right column.

	RAFI Dynamic Multi-Factor Developed ex US Index			iShares MSCI EAFE ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	1.25	100.00	100.00	1.42	-0.02	-0.16	-0.17
Basic Materials	9.99	9.95	0.57	8.94	8.83	0.51	-0.01	0.00	-0.01
Consumer, Cyclical	15.17	14.77	-0.92	12.83	12.78	0.27	-0.03	-0.18	-0.21
Magna International Inc.	0.52	0.50	-9.16	--	--	--	-0.06	--	-0.06
Sony Corporation	0.25	0.27	20.20	0.45	0.54	20.20	-0.04	--	-0.04
Kingfisher Plc	0.22	0.23	-14.20	0.06	0.05	-14.20	-0.03	--	-0.03
Autoliv Inc.	0.18	0.11	-15.09	--	--	--	-0.02	--	-0.02
Consumer, Non-Cyclical	14.85	14.64	-0.86	13.93	13.76	0.07	-0.01	-0.15	-0.15
Nestle S.A.	0.71	0.80	8.16	1.68	1.81	8.16	-0.06	--	-0.06
Royal Ahold Delhaize N.V.	0.34	0.53	-4.18	0.21	0.20	-4.18	-0.02	--	-0.02
Tesco PLC	0.48	0.41	-7.73	0.23	0.21	-7.73	-0.02	--	-0.02
Reckitt Benckiser Group p	0.25	0.25	12.23	0.39	0.42	12.23	-0.02	--	-0.02
Energy	6.14	9.38	4.00	5.92	6.03	4.06	0.09	-0.00	0.08
Royal Dutch Shell Plc Clas	--	--	--	0.94	0.91	-0.75	0.02	--	0.02
JXTG Holdings, Inc.	0.47	0.47	9.92	0.16	0.17	9.92	0.02	--	0.02
Showa Shell Sekiyu K.K.	0.06	0.12	42.00	0.02	0.03	42.00	0.03	--	0.03
Idemitsu Kosan Co., Ltd.	0.08	0.21	49.57	0.03	0.05	49.57	0.05	--	0.05
Financial	18.76	14.70	1.15	23.56	23.24	0.34	0.10	0.13	0.23
Intesa Sanpaolo S.p.A.	0.13	--	-1.31	0.27	0.26	-11.94	0.04	--	0.04
Banco Bilbao Vizcaya Arg	--	--	--	0.33	0.29	-10.08	0.04	--	0.04
Westpac Banking Corporat	--	--	--	0.51	0.48	-6.65	0.04	--	0.04
HSBC Holdings Plc	0.74	0.07	-5.90	1.31	1.21	-5.90	0.08	--	0.08
Health care	6.65	7.01	5.74	10.39	10.84	5.56	-0.15	0.01	-0.14
Industrial	11.95	12.32	2.58	10.74	10.84	2.32	0.01	0.03	0.04
Technology	5.68	5.21	1.13	6.29	6.29	1.02	0.01	0.01	0.01
Telecommunications	5.34	6.01	3.33	4.03	4.13	4.23	0.05	-0.05	0.00
Utilities	5.46	6.02	-0.65	3.37	3.27	-1.33	-0.08	0.04	-0.04

From a region/country perspective, the biggest contributor to excess return was stock selection within the Eurobloc region, contributing 25bps to excess return. Japan was the biggest detractor to return, mainly due to a large underweight to Softbank, which was previously mentioned.

	RAFI Dynamic Multi-Factor Developed ex US Index			iShares MSCI EAFE ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	1.25	100.00	100.00	1.42	-0.11	-0.07	-0.17
Asia ex Japan	4.94	4.29	-2.43	4.85	4.77	0.11	0.01	-0.11	-0.10
Australia & New Zealand	5.76	5.75	0.02	7.16	6.95	-0.79	0.03	0.05	0.08
Canada	6.12	5.73	-0.27	--	--	--	-0.10	--	-0.10
Denmark, Norway, Sweden	5.67	6.27	6.91	4.97	5.26	5.44	0.04	0.09	0.13
Eurobloc	25.39	26.59	0.87	31.78	31.50	0.14	0.06	0.20	0.25
Bayer AG	--	--	--	0.69	0.55	-19.33	0.15	--	0.15
Electricite de France	0.16	0.28	27.73	0.06	0.07	27.73	0.04	--	0.04
Anheuser-Busch InBev	0.57	0.23	-13.49	0.54	0.46	-13.49	0.04	--	0.04
Japan	25.10	25.87	2.73	24.03	24.55	3.83	0.04	-0.28	-0.24
SoftBank Group Corp.	0.18	0.14	40.57	0.42	0.58	40.57	-0.12	--	-0.12
Mitsubishi UFJ Financial	--	--	--	0.47	0.51	11.10	-0.04	--	-0.04
Sony Corporation	0.25	0.27	20.20	0.45	0.54	20.20	-0.04	--	-0.04
Other	0.49	0.48	11.64	0.27	0.29	10.27	0.02	0.01	0.02
Switzerland	6.28	6.17	6.28	7.78	8.29	7.32	-0.11	-0.06	-0.17
United Kingdom	17.96	16.30	-2.68	18.34	17.63	-1.73	0.04	-0.16	-0.12
United States	2.28	2.55	2.48	0.82	0.77	-5.58	-0.12	0.20	0.08

Current Positioning

At the 9/30 rebalance, the biggest shifts in factor allocations were a 5.5% increase to Low Volatility and a 3.4% decrease in Value.

- » **Low Volatility** – The large increase to Low Volatility was primarily driven by strong momentum scores in the Developed Europe ex UK (+6% vs. +1% average) and Japan (+8% vs. +5% average) regions.
- » **Value** – Value had the worst momentum and reversal scores in the Developed Europe ex UK region (-45% vs. -38% for average factor reversal score, and -1% vs. +1% average factor momentum score) as well as poor reversal (-26% vs. -24% average) and momentum (0% vs. +3% average) scores in the Developed Other regions.

Note: the reversal score is measured as the past five year's performance excluding the most recent year. For purposes of calculating the reversal score the sign is reversed. For example, if a factor's reversal score is -25 that would mean it was up 25% over the measurement period. The momentum score is measured as the past one year's performance excluding the most recent month.

The following table lists the top five largest stocks by cap-weight that failed to make it into the index at the 9/30 rebalance due to their factor scores. Cumulative-weight rank represents a 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.

Company	Region	Cap-Weight (9/30/2018)	Cumulative Weight Rank			
			Value	Low Volatility	Quality	Momentum
Sanofi	Dev Europe x UK	0.70%	44.2%	48.0%	46.3%	82.1%
Allianz	Dev Europe x UK	0.69%	56.1%	42.7%	68.7%	65.8%
Com. Bank of Australia	Dev Other	0.62%	55.2%	64.2%	74.6%	67.7%
Bayer	Dev Europe x UK	0.57%	72.3%	62.1%	61.9%	96.5%
Mitsubishi Financial	Japan	0.51%	45.7%	89.6%	56.8%	80.5%

Global

Global	QTD Return	6/30/2018 Allocation	Contribution to Return	9/30/2018 Allocation
RAFI Dynamic Multi-Factor Global Index	3.66%	---	---	---
RAFI Multi-Factor Global Index	3.80%	---	---	---
<i>FTSE Global All Cap</i>	4.05%	---	---	---
<i>MSCI AC World Index All Cap</i>	3.95%	---	---	---
RAFI Value Factor Global Index	3.62%	25.3%	0.92%	22.3%
RAFI Low Volatility Factor Global Index	4.90%	13.5%	0.66%	18.1%
RAFI Quality Factor Global Index	4.25%	20.6%	0.88%	22.0%
RAFI Momentum Factor Global Index	3.44%	24.6%	0.85%	22.0%
<i>FTSE AW All World Index</i>	4.36%	---	---	---
<i>MSCI AC World Index</i>	4.40%	---	---	---
RAFI Size Factor Developed Index	1.96%	15.9%	0.31%	15.6%
<i>FTSE Small Cap Developed</i>	2.73%	---	---	---
<i>MSCI The World Index Small Cap - Gross Return</i>	2.05%	---	---	---

The RAFI Dynamic Multi-Factor Global Index underperformed the MSCI AC World Index All Cap by 29bps for the quarter ending September 2018. The RAFI Low Volatility Factor Global Index was the only single-factor strategy that outperformed its benchmark for the quarter.

Attribution Results

From a stock-level perspective, the top five contributors to excess return were Tencent, Facebook, CVS, Target, and Express Scripts. The following table illustrates each stock's total weight, active weight, contribution to return, and individual weight in the single-factor indices.

Top Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
Tencent	0.18%	-0.41%	-17.71%	0.10%	—	—	—	0.18%
Facebook	0.52%	-0.40%	-15.37%	0.09%	—	—	—	0.45%
CVS Health Corp.	0.62%	0.46%	23.26%	0.08%	0.43%	0.21%	—	—
Target	0.72%	0.61%	16.78%	0.07%	0.29%	0.14%	0.22%	0.05%
Express Scripts	0.49%	0.38%	23.05%	0.06%	0.30%	0.16%	—	0.05%

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

The bottom five contributors are all US companies, with four of the five being technology companies. Large underweights for Apple, Microsoft, and Amazon have resulted in those stocks being in the top five detractors to excess return for most of the quarter.

Bottom Five Contributors to Excess Return

	Total	Active	Q3 2018	Excess Return	Contribution to Overall Index Weight			
	Weight	Weight	Return	Contribution	Value	Low Volatility	Quality	Momentum
Apple	0.55%	-1.70%	22.38%	-0.27%	—	—	0.50%	—
Microsoft	0.64%	-1.08%	16.43%	-0.12%	—	—	—	0.55%
Amazon	0.67%	-0.97%	17.84%	-0.12%	—	—	—	0.58%
Pfizer	0.00%	-0.51%	22.51%	-0.08%	—	—	—	—
Seagate Technology	0.24%	0.20%	-15.05%	-0.04%	0.11%	—	0.09%	0.01%

Note: Size excluded from the table since the above listed securities are not eligible for the RAFI Size Factor US Index.

From a sector perspective, Health Care and Technology were the biggest detractors to return at -35 bps and -34 bps, respectively. Meanwhile, the Energy and Financial sectors were the biggest contributors to excess return at 22 bps and 15 bps, respectively. The following table displays the portfolio's sector representation at the beginning and end of the quarter. The sector-level effect on return is shown in the far right column.

	RAFI Dynamic Multi-Factor Global Index			iShares MSCI ACWI ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	3.74	100.00	100.00	4.53	-0.41	-0.38	-0.79
Basic Materials	7.73	8.33	2.18	5.47	5.19	0.05	-0.13	0.18	0.05
Consumer, Cyclical	18.00	17.55	2.29	13.73	13.52	2.98	-0.06	-0.12	-0.18
Consumer, Non-Cyclical	11.52	11.26	1.76	9.18	8.84	2.38	-0.05	-0.08	-0.12
Energy	7.57	11.45	5.52	6.69	6.34	3.41	-0.01	0.23	0.22
Public Joint-Stock Compar	0.14	0.20	16.82	--	--	--	0.02	--	0.02
Schlumberger NV	--	--	--	0.19	0.17	-8.38	0.02	--	0.02
Petroleo Brasileiro SA Spo	0.10	0.24	20.53	--	--	--	0.03	--	0.03
ConocoPhillips	0.44	0.75	11.63	0.17	0.19	11.63	0.04	--	0.04
Financial	16.68	13.44	1.83	20.59	20.81	1.99	0.18	-0.03	0.15
Westpac Banking Corporat	--	--	--	0.16	0.14	-6.65	0.02	--	0.02
HSBC Holdings Plc	0.33	0.03	-5.90	0.38	0.34	-5.90	0.03	--	0.03
Wells Fargo & Company	--	--	--	0.57	0.52	-4.50	0.05	--	0.05
iShares MSCI India ETF	--	--	--	0.10	0.89	-2.46	0.09	--	0.09
Health care	7.35	7.50	9.61	11.00	11.61	11.09	-0.25	-0.10	-0.35
Pfizer Inc.	--	--	--	0.47	0.55	22.51	-0.08	--	-0.08
Eli Lilly and Company	--	--	--	0.19	0.23	26.45	-0.04	--	-0.04
Merck & Co., Inc.	0.06	0.08	17.67	0.36	0.40	17.67	-0.04	--	-0.04
Johnson & Johnson	0.52	0.44	14.63	0.71	0.78	14.63	-0.03	--	-0.03
Industrial	10.39	10.39	5.72	8.76	9.00	6.93	0.03	-0.12	-0.09
Technology	13.12	11.83	4.67	18.42	18.58	6.54	-0.12	-0.22	-0.34
Apple Inc.	0.56	0.59	22.38	2.07	2.42	22.38	-0.27	--	-0.27
Microsoft Corporation	0.75	0.66	16.43	1.61	1.80	16.43	-0.12	--	-0.12
Taiwan Semiconductor Ma	--	--	--	0.40	0.46	21.07	-0.06	--	-0.06
Seagate Technology PLC	0.21	0.21	-15.05	0.04	0.03	-15.05	-0.04	--	-0.04
Telecommunications	4.37	4.59	5.02	3.23	3.29	7.11	0.03	-0.09	-0.06
Utilities	3.27	3.66	-0.32	2.93	2.82	0.62	-0.04	-0.03	-0.07

From a regional perspective, BRIC countries were the biggest contributors to excess return, driven mainly by Brazil, China, and Russia which contributed 22bps to overall return, while India detracted 10bps. The United States was the biggest detractor to excess return at -63bps, driven mainly by technology companies.

	RAFI Dynamic Multi-Factor Global Index			iShares MSCI ACWI ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	3.74	100.00	100.00	4.53	-0.34	-0.45	-0.79
BRIC	3.54	3.72	4.64	3.05	2.04	1.00	-0.01	0.13	0.12
Vale	0.14	0.35	18.25	--	--	--	0.05	--	0.05
Alibaba Group	0.25	0.16	-11.19	0.48	0.41	-11.19	0.04	--	0.04
Petrobras	0.10	0.24	20.53	--	--	--	0.03	--	0.03
Canada	2.69	2.64	-0.67	3.11	2.99	0.41	0.01	-0.03	-0.02
EM ex BRIC	5.84	5.62	1.79	5.45	5.41	3.02	-0.01	-0.07	-0.07
Europe (Other)	10.71	10.68	2.83	8.14	8.03	2.54	-0.05	0.03	-0.02
France	2.90	3.48	2.73	3.29	3.22	2.13	-0.00	0.02	0.02
Germany	2.81	2.97	1.22	2.99	2.88	-0.28	-0.00	0.05	0.04
Japan	10.32	10.56	2.63	7.63	7.57	4.23	-0.00	-0.17	-0.17
Pacific ex Japan	6.11	5.75	-0.99	6.45	5.96	-2.45	0.02	0.09	0.11
United Kingdom	7.54	6.87	-2.59	5.76	5.42	-1.59	-0.09	-0.08	-0.17
United States	47.53	47.72	6.44	54.13	56.47	7.39	-0.21	-0.43	-0.63
Apple Inc.	0.56	0.59	22.38	2.07	2.42	22.38	-0.27	--	-0.27
Amazon.com, Inc.	0.80	0.71	17.84	1.52	1.74	17.84	-0.12	--	-0.12
Microsoft Corporation	0.75	0.66	16.43	1.61	1.80	16.43	-0.12	--	-0.12

Current Positioning

At the 9/30 rebalance, the biggest shifts in factor exposure were a 4.5% increase to Low Volatility and a 3.0% decrease in Value.

- » **Low Volatility** – The large increase to Low Volatility was primarily driven by strong momentum scores in the Developed Europe ex UK (+6% vs. +1% average) and Japan (+8% vs. +5% average) regions, and above-average momentum (+2% vs. +1% average) and reversal scores (-17% vs. -23%) in Emerging Markets.
- » **Value** – Value had the worst momentum and reversal scores in the Developed Europe ex UK region (-45% vs. -38% average factor reversal score, and -1% vs. +1% average factor momentum score) as well as poor reversal scores in Developed Other (-26% vs. -24% average) and Emerging Markets (-13% vs. 23% average) regions.

Note: The reversal score is measured as the past five year's performance excluding the most recent year. For purposes of calculating the reversal score the sign is reversed. For example, if a factor's reversal score is -25 that would mean it was up 25% over the measurement period. The momentum score is measured as the past one year's performance excluding the most recent month.

The following table lists the top five largest stocks by cap-weight that failed to make it into the index at the 9/30 rebalance due to their factor scores. Cumulative-weight rank represents a 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.

Company	Region	Cap-Weight (9/30/2018)	Cumulative Weight Rank			
			Value	Low Volatility	Quality	Momentum
JPMorgan Chase	US	0.84%	65.95%	85.77%	78.47%	53.58%
Facebook	US	0.82%	99.51%	89.70%	59.32%	83.61%
Alphabet	US	0.79%	98.39%	75.99%	48.00%	47.54%
Bank of America	US	0.61%	79.44%	95.43%	81.28%	56.67%
Berkshire Hathaway	US	0.53%	75.50%	34.42%	87.43%	60.73%

Emerging Markets

Emerging Markets	QTD Return	6/30/2018 Allocation	Contribution to Return	9/30/2018 Allocation
RAFI Dynamic Multi-Factor Emerging Markets Index	2.20%	---	---	---
RAFI Multi-Factor Emerging Markets Index	2.27%	---	---	---
RAFI Value Factor Emerging Markets Index	4.07%	26.3%	1.07%	24.9%
RAFI Low Volatility Factor Emerging Markets Index	4.24%	21.0%	0.89%	30.5%
RAFI Quality Factor Emerging Markets Index	2.67%	25.4%	0.68%	25.5%
RA Momentum Factor Emerging Markets Index	-1.11%	27.2%	-0.30%	19.2%
<i>MSCI Emerging Markets Index</i>	<i>-0.95%</i>	<i>---</i>	<i>---</i>	<i>---</i>

The RAFI Dynamic Multi-Factor Emerging Markets Index outperformed the MSCI Emerging Markets Index by 315bps for the quarter ending September 2018. The RA Momentum Factor EM Index was the only single-factor index to underperform, while RAFI Low Volatility Factor EM Index and RAFI Value Factor EM Index outperformed by 519bps and 502bps, respectively.

Attribution Results

From a stock-level perspective, the five largest contributors and to excess return were Tencent, Vale, Alibaba, China Petroleum & Chemical, and Lukoil. Tencent, the single largest contributor added 66bps to excess return due to a 3.5% underweight. The following tables illustrate each stock's total weight, active weight, contribution to return, and individual weight in the single-factor indices.

Top Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
Tencent	1.43%	-3.54%	-17.71%	0.66%	—	—	—	1.26%
Vale	2.57%	1.74%	18.25%	0.34%	0.83%	—	0.72%	0.79%
Alibaba	1.45%	-2.52%	-11.19%	0.27%	—	—	—	1.28%
China Petrol. & Chem.	2.20%	1.73%	14.82%	0.26%	1.70%	—	—	0.33%
Lukoil	2.20%	1.63%	13.84%	0.25%	1.70%	—	—	0.47%

Taiwan Semiconductor was the single largest detractor to excess returns. A 2.1% underweight detracted 41bps as the stock rose 21% for the quarter.

Bottom Five Contributors to Excess Return

	Total Weight	Active Weight	Q3 2018 Return	Excess Return Contribution	Contribution to Overall Index Weight			
					Value	Low Volatility	Quality	Momentum
Taiwan Semiconductor	1.65%	-2.14%	21.07%	-0.41%	—	—	1.50%	0.02%
China Mobile	0.00%	-1.10%	13.74%	-0.16%	—	—	—	—
HDFC Bank	1.15%	1.15%	0.00%	-0.11%	—	—	—	1.02%
POSCO	1.40%	0.98%	-9.62%	-0.09%	1.28%	—	—	0.28%
LG Electronics	0.74%	0.60%	-14.05%	-0.09%	0.30%	0.29%	—	0.09%

From a sector perspective, Financial and Utilities were the biggest detractors to return at -36bps and -12bps, respectively. Meanwhile, the Energy and Consumer, Cyclical sectors were the biggest contributors to excess return at 137bps and 95bps, respectively.

	RAFI Dynamic Multi-Factor Emerging Markets Index			iShares MSCI Emerging Markets ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	2.25	100.00	100.00	-1.03	2.15	1.13	3.28
Basic Materials	13.25	16.13	6.38	8.68	9.02	4.01	0.37	0.36	0.73
Consumer, Cyclical	13.98	10.70	-4.35	14.22	13.02	-10.34	0.26	0.69	0.95
Ctrip.com International Ltd	--	--	--	0.36	0.29	-21.96	0.08	--	0.08
Wal-Mart de Mexico SAB de	0.66	0.84	15.10	0.27	0.31	15.10	0.08	--	0.08
JD.com, Inc. Sponsored ADR	1.09	--	-0.41	0.54	0.37	-33.02	0.19	--	0.19
Alibaba Group Holding Ltd.	2.06	1.33	-11.19	4.13	3.74	-11.19	0.28	--	0.28
Consumer, Non-Cyclical	7.74	7.67	-3.22	7.22	7.15	-2.12	-0.01	-0.09	-0.10
Energy	12.00	17.68	14.94	7.19	8.27	14.49	1.31	0.06	1.37
Oil company LUKOIL PJSC	--	--	--	0.10	0.11	13.79	-0.01	--	-0.01
China Petroleum & Chemical	1.29	2.33	14.82	0.44	0.50	14.82	0.26	--	0.26
Public Joint-Stock Company	1.14	2.19	16.82	0.38	0.43	16.82	0.26	--	0.26
Petroleo Brasileiro SA Spon	0.79	1.96	20.53	--	--	--	0.35	--	0.35
Financial	18.71	15.70	-1.01	25.39	25.57	0.42	-0.13	-0.23	-0.36
HDFC Bank Limited Spons	1.33	1.05	-10.40	--	--	--	-0.11	--	-0.11
Grupo Financiero Banorte	--	--	--	0.28	0.37	21.48	-0.07	--	-0.07
Kotak Mahindra Bank Limi	0.42	0.23	-19.41	--	--	--	-0.05	--	-0.05
Alpha Bank AE	0.19	0.12	-35.64	0.06	0.04	-35.64	-0.04	--	-0.04
Health care	1.00	1.10	-5.57	3.14	2.98	-6.87	0.12	0.01	0.13
Industrial	4.76	5.13	2.37	4.02	4.18	2.19	0.03	0.01	0.04
Technology	18.26	15.39	-0.37	23.69	23.23	-3.26	0.19	0.47	0.67
Telecommunications	6.38	6.00	0.49	4.32	4.49	1.84	0.05	-0.08	-0.03
Utilities	3.91	4.50	-4.27	2.13	2.10	-2.80	-0.05	-0.08	-0.12
Korea Electric Power Corp	0.74	0.87	-7.85	0.14	0.13	-7.85	-0.06	--	-0.06
ENN Energy Holdings Limi	0.34	0.29	-11.63	0.15	0.13	-11.63	-0.02	--	-0.02
Companhia Energetica de	0.20	0.27	-5.51	0.03	0.03	-5.51	-0.01	--	-0.01
Energy Absolute Public Co	--	--	--	0.02	0.04	50.93	-0.01	--	-0.01

From a region perspective, China, Russia, and Brazil were all significant contributors to excess return adding a combined 324bps.

	RAFI Dynamic Multi-Factor Emerging Markets Index			iShares MSCI Emerging Markets ETF			Attribution Analysis		
	Port. Beginning Weight	Port. Ending Weight	Port. Total Return	Bench. Beginning Weight	Bench. Ending Weight	Bench. Total Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	100.00	2.25	100.00	100.00	-1.03	1.75	1.53	3.28
Asia Pac x China, India	23.23	22.02	6.16	19.21	20.48	6.64	0.16	-0.09	0.07
Brazil	6.94	10.17	10.59	5.88	6.30	6.16	0.29	0.39	0.69
Vale S.A. Sponsored ADR	1.11	2.83	18.25	--	--	--	0.51	--	0.51
Petroleo Brasileiro SA Spon	0.79	1.96	20.53	--	--	--	0.35	--	0.35
China	20.32	17.60	-2.37	32.61	30.61	-7.33	0.91	0.94	1.85
Tencent	1.88	1.29	-17.71	5.51	4.62	-17.71	0.67	--	0.67
Alibaba Group	2.06	1.33	-11.19	4.13	3.74	-11.19	0.28	--	0.28
China Petroleum & Chem	1.29	2.33	14.82	0.44	0.50	14.82	0.26	--	0.26
JD.com, Inc.	1.09	--	-0.41	0.54	0.37	-33.02	0.19	--	0.19
Ctr & S America x Brazil	3.79	3.54	3.92	4.60	4.87	3.76	-0.07	0.01	-0.06
Europe x Russia	1.12	1.01	9.30	1.56	1.72	9.18	-0.07	-0.00	-0.07
India	10.45	9.65	-0.02	8.67	8.61	-2.29	-0.01	0.23	0.22
Middle East & Africa	7.63	7.27	-7.68	8.14	7.63	-7.61	0.00	-0.00	0.00
Other	18.88	18.77	-0.79	15.80	16.06	-0.06	0.04	-0.16	-0.12
Russia	7.64	9.97	9.77	3.50	3.71	6.98	0.49	0.22	0.70
LUKOIL	1.41	2.44	15.10	--	--	--	0.34	--	0.34
Gazprom	1.14	2.19	16.82	0.38	0.43	16.82	0.26	--	0.26

Current Positioning

At the 9/30 rebalance, the RAFI Dynamic Multi-Factor Emerging Markets Index experienced some large shifts in factor exposure, with the biggest shifts being a 9.4% increase to Low Volatility and an 8.0% decrease in Momentum.

Low Volatility – The momentum score for Low Volatility improved materially from the previous quarter and registered as the second-highest momentum score for the quarter (+2% vs. +1% average for all factors), which was the main driver for its increased allocation. In addition, Low Volatility maintained a strong reversal score relative to the other factors (–17% vs. –23% average).

Momentum – Momentum had the second-worst reversal score (–28% vs. –23% average) and the worst momentum score (–3% vs. +1% average).

Note: The reversal score is measured as the past five year’s performance excluding the most recent year. For purposes of calculating the reversal score the sign is reversed. For example, if a factor’s reversal score is –25 that would mean it was up 25% over the measurement period. The momentum score is measured as the past one year’s performance excluding the most recent month.

The following table lists the top five largest stocks by cap-weight that failed to make it into the index at the 9/30 rebalance due to their factor scores. Cumulative-weight rank represents a 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.

Company	Region	Cap-Weight (9/30/2018)	Cumulative Weight Rank			
			Value	Low Volatility	Quality	Momentum
Samsung Electronics	Emerging Mkts	3.88%	65.1%	55.0%	35.9%	82.8%
Alibaba Group	Emerging Mkts	3.62%	99.6%	83.3%	96.8%	72.3%
Baidu	Emerging Mkts	1.22%	98.2%	79.5%	90.0%	77.8%
China Mobile	Emerging Mkts	1.17%	38.5%	27.8%	44.2%	51.9%
Ind. and Com. Bank of China	Emerging Mkts	0.97%	55.8%	66.8%	52.7%	60.4%

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