

RAFI Roadmap: A guide to better investor outcomes

RAFI™ Multi-Factor Developed Index

BENCHMARK Dev Cap-Weight Large+Mid
ASSET CLASS Equity

What Is the Process?

1. Separate the universe into large companies and small companies.
2. Form individual factor sleeves:

RAFI Factor Index Construction

Factor	Measures	Select	Weighting	Rebalance
Momentum	Standard, Idiosyncratic, and Fresh Momentum	Top 50% by weight	Cap Weight	Full Quarterly
Value	RAFI / Cap	Top 25% by weight	RAFI Weight	Quarterly staggered
Low Volatility	Global, Industry, and Country Systematic Risk	Top 25% by weight	RAFI Weight	Quarterly staggered
Quality	Profitability and Investment	Top 25% by weight	RAFI Weight	Quarterly Staggered
Size	Average of four factor portfolios (value, quality, low volatility, momentum) built within small universe and rebalanced quarterly.		Due to lack of liquidity, size is excluded from the Emerging Markets Index.	

3. Implement trading controls to minimize turnover.
4. Equally weight the five factor sleeves.

Will the Strategy Deliver?

This strategy is expected to deliver excess returns in the future because it is theoretically and empirically robust. Every investor should ask five questions before investing:

1. Who is on the other side of the trade?
2. Has the strategy worked over long and varying time periods net of changes in valuation?
3. Does the strategy produce similar results across different regions?
4. Does the the strategy produce similar results across slightly different definitions (e.g., P/B vs. P/S)?
5. Is the strategy investable in the real world net of costs?

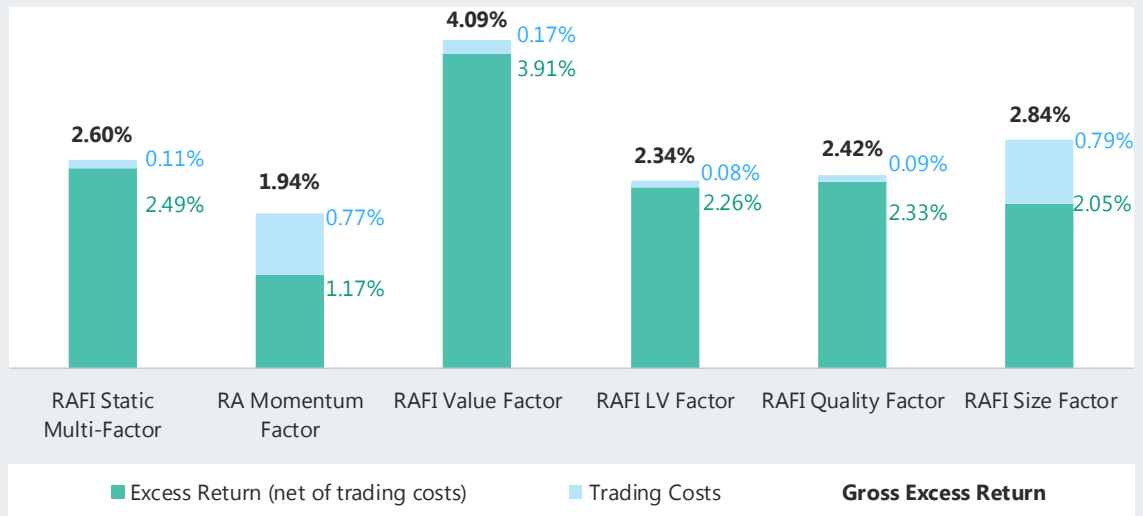
Why This Strategy Delivers

	Theory	Empirical Evidence			
Factor	1. Who's on the Other Side of the Trade?	2. Excess Return*	3. Regions That Worked	4. Definitions That Worked	5. Trading Costs**
RA Momentum Factor	The Patsy Momentum premium delivers because uninformed investors are slow to react to new information about a company.	1.94%	5 of 5	3 of 3	0.77%
RAFI Value Factor	The Performance Chaser Value premium delivers because <i>performance chasers</i> under-own value securities (preferring fast-growing glamour stocks), driving prices down, yields up, and future returns higher.	4.09%	5 of 5	4 of 4	0.17%
RAFI Low Volatility Factor	The Gambler Low volatility premium delivers because investors' preference for gambling leads them to over-own high volatility securities as "lottery tickets."	2.34%	5 of 5	4 of 4	0.08%
RAFI Quality Factor	The Empire Builder Quality premium delivers because investors are drawn to the glamour of <i>empire building</i> companies and underappreciate conservative capital allocators with wide economic moats.	2.42%	5 of 5	5 of 5	0.09%
RAFI Size Factor	All of the Above <i>All of the factor premiums above</i> tend to work better in small-capitalization markets because these markets tend to be less efficient and experience larger pricing errors.	2.84%	3 of 3	N/A	0.79%

SOURCE: CRSP/Compustat and Worldscope/Datastream | DATA: From 07/01/1989 to 06/30/2018 | *Gross of trading costs.

**Annualized trading costs are estimated as the market impact of transactions, assuming \$10B in AUM.

Historical Excess Return, by Developed Factor Index



SOURCE: CRSP/Compustat and Worldscope/Datastream | DATA: From 07/01/1989 to 06/30/2018 | NOTE: Annualized trading costs are estimated as the market impact of transactions, assuming \$10B in AUM.

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SEPTEMBER 2016

[Will Your Factor Deliver? An Examination of Robustness and Implementation Costs](#)

JASON HSU, VITALI KALESNIK, NOAH BECK, AND HELGE KOSTKA

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FEBRUARY 2017

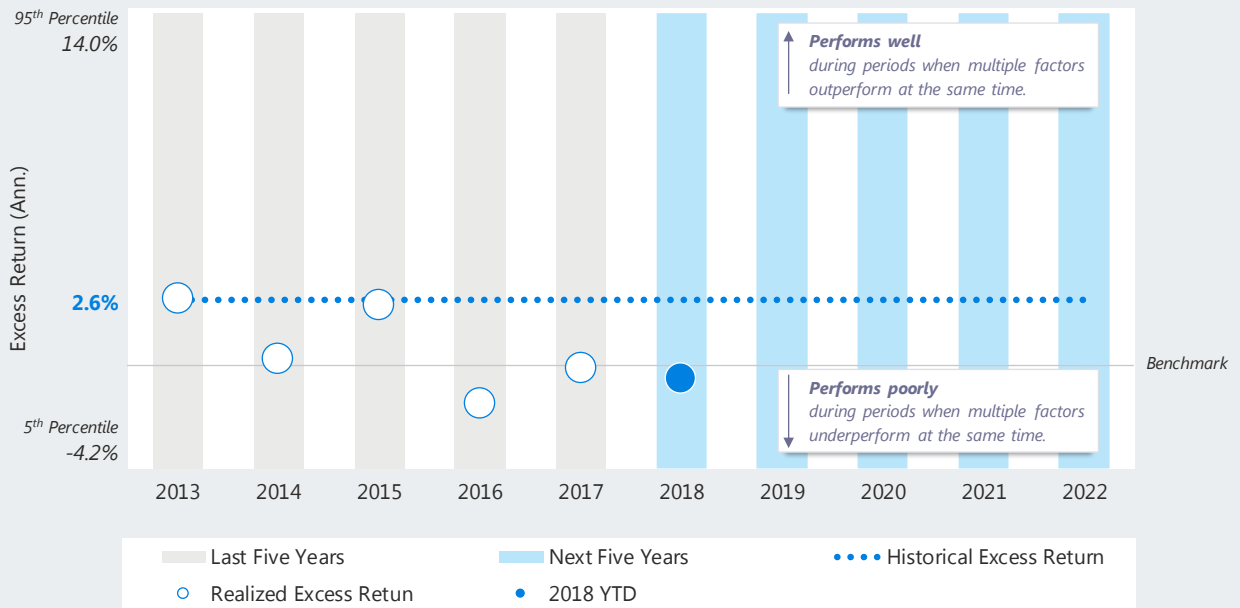
[Forecasting Factor and Smart Beta Returns \(Hint: History Is Worse than Useless\)](#)

ROB ARNOTT, NOAH BECK, AND VITALI KALESNIK

What to Expect?

The RAFI Multi-Factor Developed Index shows 2.6% in annualized excess returns since 1989. However, those results have come with a wide range of outcomes (+/- 11% or more) in any given year.

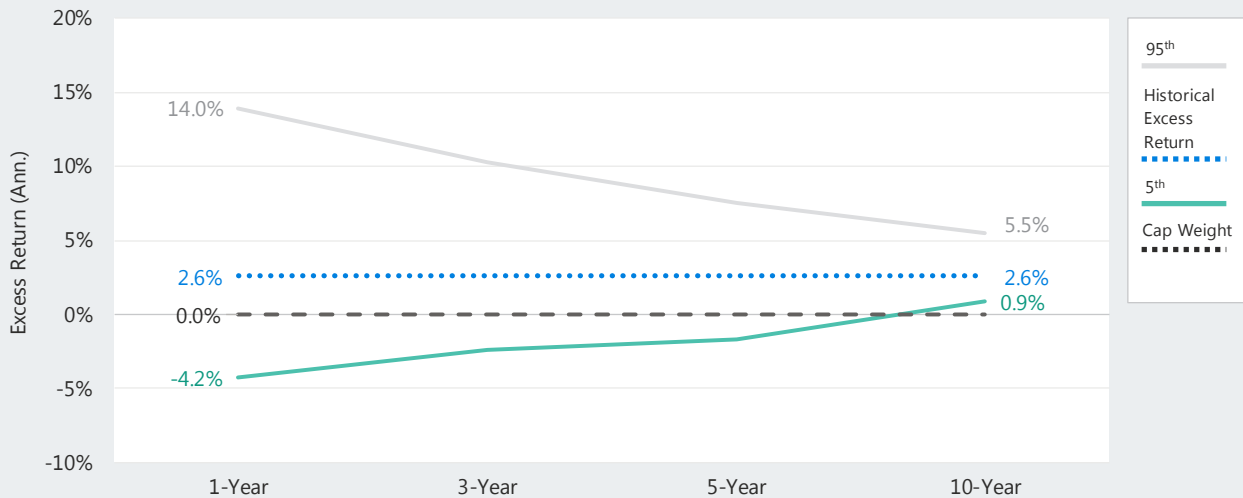
Calendar Excess Returns



NOTE: Based on rolling returns from simulated data | SOURCE: CRSP/Compustat and Worldscope/Datastream | DATA: As of 06/30/2018

Rolling Excess Returns

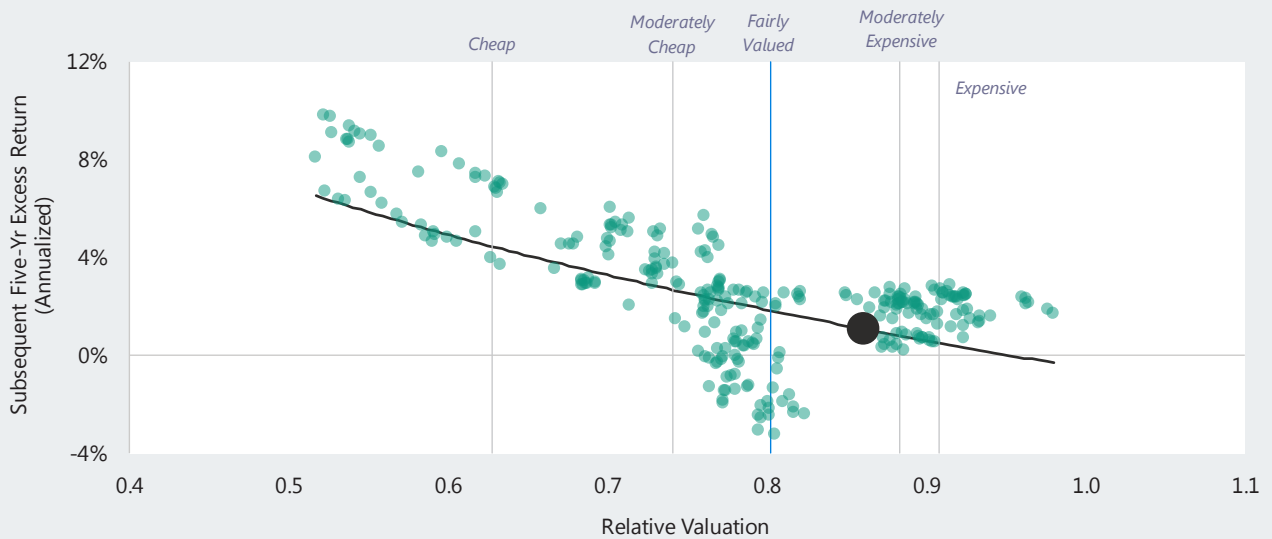
Longer investment horizons produce more predictable returns.



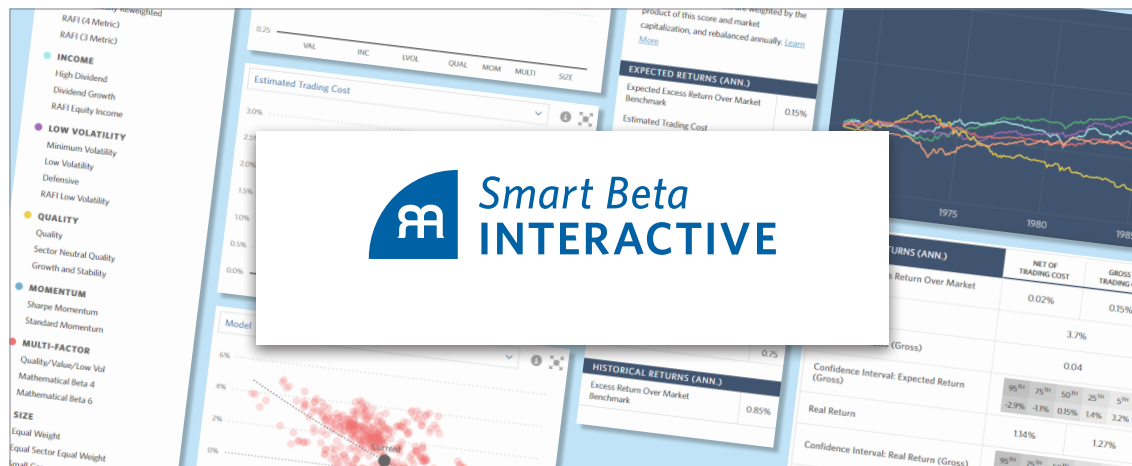
NOTE: Based on rolling returns from simulated data | SOURCE: CRSP/Compustat and Worldscope/Datastream | DATA: As of 06/30/2018

The Index trades at a **discount of 14% (0.86x)** relative to the valuation of its cap-weighted benchmark. This is **expensive** relative to its **median discount of 20% (0.80x)**. Given current valuations, our **Smart Beta Interactive** website forecasts an annualized excess return of **1.1%** over the next five years (gross of costs).

Valuations & Return Expectations



SOURCE: CRSP/Compustat and Worldscope/Datastream | DATA: From 07/01/1989 to 06/30/2018



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JULY 2014

Finding Smart Beta in the Factor Zoo

JASON HSU AND VITALI KALESNIK

Past Performance & Characteristics

AS OF 09-30-2018

Quarterly Commentary

The RAFI Multi-Factor Developed Index underperformed the MSCI World All Cap Index by 62 bps 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. The RAFI Value Factor Developed Index was the worst performing single-factor strategy.

Attributions and performance commentary: <https://www.rafi.com/investor-support/resources>

Trailing Returns

Index	QTD	1 Yr	3 Yr	5 Yr	10 Yr	ITD*	10-Yr Volatility	10-Yr TE**
RAFI Multi-Factor Developed Index	4.0%	10.8%	13.0%	9.6%	10.3%	14.9%	14.7%	2.1%
MSCI World All Cap	4.6%	11.6%	14.3%	9.9%		16.3%		N/A
RAFI Value Factor Developed Index	3.5%	12.5%	14.1%	9.6%	11.4%	14.3%	17.1%	4.5%
RAFI Low Volatility Factor Developed Index	5.1%	8.1%	10.7%	9.5%	9.7%	12.0%	12.0%	6.1%
RAFI Quality Factor Developed Index	4.6%	10.7%	13.4%	9.4%	10.5%	14.6%	14.2%	2.5%
RA Momentum Factor Developed Index	4.3%	11.4%	12.9%	9.3%	8.8%	17.2%	14.6%	3.4%
MSCI World Index	5.1%	11.8%	14.2%	9.9%	9.2%	16.3%	15.4%	N/A
RAFI Size Factor Developed Index	2.0%	10.0%	13.3%	10.0%	11.1%	15.3%	16.9%	2.5%
MSCI World Index Small Cap	2.1%	10.6%	15.2%	10.1%	11.5%	15.9%	17.7%	N/A

SOURCE: FactSet | Data: As of 09/30/2018 in USD | INCEPTION DATE: 01/31/2017

* Inception to Date (ITD) uses the first full month of returns after inception date. All returns prior to inception are simulated. Please see disclosures for important information regarding simulated performance.

** Annualized Tracking Error calculated against each index's appropriate benchmark using the first full month of returns following index inception. Index returns prior to inception are simulated.

Characteristics

Index	Number of Holdings	P/E	P/B	P/S	Dividend Yield	Market Cap / \$B
RAFI Multi-Factor Developed Index	2848	16.29	2.14	1.05	2.57	79.49
RAFI Value Factor Developed Index	539	12.32	1.29	0.54	2.94	53.68
RAFI Low Volatility Factor Developed Index	678	16.96	2.27	1.14	2.99	77.08
RAFI Quality Factor Developed Index	648	16.44	3.09	1.41	2.79	105.09
RA Momentum Factor Developed Index	681	18.17	2.64	1.57	2.04	138.58
RAFI Size Factor Developed Index	1728	18.10	2.18	1.16	2.16	7.65

SOURCE: FactSet | Data: As of 09/30/2018 in USD | INCEPTION DATE: 01/31/2017

NOTE: Portfolio characteristics derived from FactSet. Data prior to launch are simulated. One-way turnover data are historical averages based on simulated history. Capacity is estimated at 50-basis-point market-impact level.

Correlation of Excess Returns

Developed (6/1992-9/2018)	RAFI Value Factor Dev	RAFI Low Vol Factor Dev	RAFI Quality Factor Dev	RA Momentum Factor Dev	RAFI Size Factor Dev	Tracking Error*
RAFI Value Factor Dev	1	0.48	0.52	0.00	0.46	5.81%
RAFI Low Vol Factor Dev	N/A	1	0.76	0.24	0.22	6.75%
RAFI Quality Factor Dev	N/A	N/A	1	0.27	0.21	4.18%
RA Momentum Factor Dev	N/A	N/A	N/A	1	0.32	3.85%
RAFI Size Factor Dev	N/A	N/A	N/A	N/A	1	6.47%
RAFI Multi-Factor Developed						3.59%

SOURCE: FactSet | DATA: As of 09/30/2018 in USD | *Annualized Tracking Error calculated against each index's appropriate benchmark using the first full month of returns following index inception. Index returns prior to inception are simulated.

Top 10 Holdings

RAFI Multi-Factor Developed Index	Weights (%)	Value Factor	Low Vol. Factor	Quality Factor	Mom. Factor	Size Factor
1 Walmart	1.22	2.51	2.66	-	0.66	-
2 IBM	1.13	1.12	2.39	2.35	-	-
3 Verizon	1.00	-	1.19	2.46	1.09	-
4 CVS Caremark	0.86	2.17	1.96	-	-	-
5 Target	0.83	1.42	1.28	1.31	0.23	-
6 Johnson & Johnson	0.81	-	2.55	1.30	-	-
7 Chevron	0.74	2.41	-	-	1.16	-
8 Express Scripts Holding Company	0.65	1.51	1.49	-	0.26	-
9 ConocoPhillips	0.63	2.61	-	-	0.45	-
10 Apple	0.62	-	-	3.00	-	-

SOURCE: FactSet | DATA: As of 09/30/2018 in USD

Sectors

Sector	RAFI Multi-Factor Developed Index	RAFI Value Factor Developed Index	RAFI Low Volatility Factor Developed Index	RAFI Quality Factor Developed Index	RA Momentum Factor Developed Index
1 Basic Materials	7.03%	9.25%	3.10%	7.32%	6.18%
2 Consumer, Cyclical	18.16%	17.37%	13.66%	22.76%	17.63%
3 Consumer, Non-Cyclical	13.30%	8.35%	23.35%	16.20%	7.00%
4 Energy	8.90%	27.37%	1.20%	1.18%	10.03%
5 Financial	13.67%	9.73%	16.61%	7.22%	12.63%
6 Health Care	8.97%	4.09%	12.59%	8.17%	10.30%
7 Industrial	11.45%	6.48%	11.07%	15.67%	12.10%
8 Technology	10.26%	4.72%	5.44%	11.87%	19.23%
9 Telecommunications	4.77%	4.85%	7.97%	7.72%	2.41%
10 Utilities	3.48%	7.80%	5.01%	1.90%	2.49%

SOURCE: FactSet | DATA: As of 09/30/2018 in USD

Disclosures (1/2)

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