FUNDAMENTALS

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KEY POINTS

1. Smart beta strategies are countercyclical, periodically rebalancing out of winning stocks and into losers. They may underperform for extended periods but they ultimately tend to prevail.
2. Investors' procyclical behavior, selling recent losers and buying recent winners, pays for the estimated 2% per year in long-term value added by smart beta strategies.
3. Smart beta investing can be reasonably expected to have an edge as long as investors persist in following trends and chasing performance.

Slugging It Out in the Equity Arena

"No más." One of the most memorable boxing matches in history ended when those two words were uttered by Roberto Durán in the eighth round of his title rematch with Sugar Ray Leonard in 1980. Nearly 34 years later, Durán's reasons for walking out of the ring remain a matter of speculation and controversy. Was it stomach cramps? An injury? Or simply frustration at being outclassed by an opponent he had beaten soundly a scant five months earlier? Regardless, his quitting sent shockwaves through his native Panama and the entire boxing world. For Durán was the quintessential tough guy. He grew up on the hard streets of Panama City and became a professional fighter at the age of 16; his brawling style spawned the nickname "Manos de Piedra" (hands of stone). If there were "a least likely to quit mid-fight" award, Durán would win it hands down. But, whatever the reason, he just couldn't take it any longer.

Like prizefighters, investors can take quite a beating. Sometimes the blows are absolute, catastrophic losses. But more often the jabs and uppercuts come in the form of relative shortfalls. Fortified with long investment horizons, diversified rosters of managers, limited short-term liquidity needs, and ample risk tolerances, most investors should be tough enough to absorb the punishment. But all too often they, too, are sorely tempted to give up the good fight and abandon their convictions in the middle rounds. Hope fades, and they sell the stocks that have lost value. Desperation sets in, and they buy stocks that have already appreciated, on the chance they might continue to rise. In short, they quit.

Selling recent losers and buying recent winners is the antithesis of the systematic rebalancing discipline through which smart beta strategies earn long-term excess returns. Indeed, we contend that this procyclical behavior is what pays, over time, for the value added by fundamentally weighted index investing and other smart beta strategies.

Smart Betas Trading

To us, the smart beta moniker refers to rules-based investment strategies that use non-price-related weighting methods to construct and maintain a portfolio of stocks.[1] The research literature shows that smart beta strategies earn long-term returns around 2% higher than market capitalization-weighted indices. Moreover, smart beta strategies do not require any insight into the weighting mechanism. One can build a smart beta strategy with any stock ranking methodology that is not related to prices, from a strategy as naïve and transaction-intensive as equal weighting to a more efficient approach such as weighting on the basis of fundamental economic scale. For example, a low volatility portfolio and its inverse, a high volatility portfolio, both outperform the market by roughly

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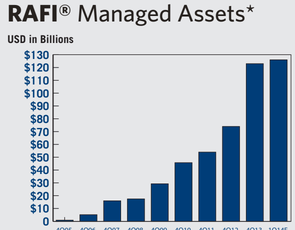
RAFI® Managed Assets*



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2%—as long as they are systematically rebalanced.[2] It is not the weighting method but the rebalancing operation that creates most of smart beta's excess return. Acting in a countercyclical or contrarian fashion, smart beta strategies buy stocks that have fallen in price and sell stocks that have risen.

Because all smart beta strategies are inherently doing the same thing—contra-trading against price movements by means of the rebalancing process—they are generally buying and selling the same stocks.[3] It seems reasonable to assume they have pretty much the same trading partners.

To illustrate this commonality, we analyzed the 2013 reconstitution of a fundamentals-weighted index in the light of the constituents' recent performance. **Table 1** lists the top 20 portfolio holdings by weight prior to rebalancing. We evaluated how the stock performed relative to the market over the previous 12 months and noted whether the rebalancing trade was a purchase or a sale. In 90% of the observations, the fundamentally weighted index is buying when the stock underperforms and selling when the stock outperforms.[4] To see whether another smart beta strategy would have traded the same stocks in the same direction, we also looked at the transactions that would have been executed by a hypothetical equal-weighted index whose holdings were contained in the Russell 1000® Index. The fundamentals- and equal-weighted strategies bought and sold 80% of the same stocks. These results indicate that smart beta strategies with meaningfully different weighting methodologies tend to engage in similar countercyclical stock trading.

> *"Like prizefighters, investors can take quite a beating."*

Who Trades Opposite Smart Beta?

The stock market is an equilibrium market. For every trade, there must be a buyer and a seller, and for one investor to profit another must lose. This simple arithmetic means that investors

Table 1. Going the Same Direction (March 2013)

Top 20 Holdings	Weight (% of Total) Pre-Reconstitution	Weight (% of Total) Post-Reconstitution	Relative Performance* (%)	Reconstitution Trades Fundamentals-Weighted	Reconstitution Trades Equal-Weighted
Bank of America	3.16	2.22	14.31	Sell	Sell
Exxon Mobil	2.74	2.98	−12.65	Buy	Buy
General Electric	2.26	1.94	1.54	Sell	Sell
Citigroup	2.15	1.65	9.25	Sell	Sell
AT&T	2.11	2.08	2.69	Sell	Sell
JPMorgan Chase	1.96	1.78	−4.18	Sell	Sell
Chevron	1.77	1.97	−6.64	Buy	Buy
Pfizer	1.64	1.40	14.17	Sell	Sell
Wal-Mart	1.58	1.03	4.09	Sell	Sell
Verizon	1.54	1.43	8.22	Sell	Sell
Berkshire Hathaway	1.47	1.12	7.70	Sell	Sell
Wells Fargo	1.31	1.44	−3.52	Buy	Sell
Johnson & Johnson	1.15	1.13	7.17	Sell	Sell
Procter & Gamble	1.06	1.11	−1.08	Buy	Sell
ConocoPhillips	0.90	1.33	−14.32	Buy	Buy
IBM	0.81	0.92	−11.88	Buy	Buy
Goldman Sachs	0.80	0.59	8.11	Sell	Sell
Microsoft	0.78	0.99	−28.27	Buy	Buy
Merck	0.75	0.78	2.84	Buy	Sell
Home Depot	0.64	0.48	25.98	Sell	Sell

*Relative performance is the stock's total return minus the total return of the Russell 1000® Index from March 19, 2012 to March 15, 2013.
Source: Research Affiliates, based on data from FactSet.

in aggregate will earn the market return and no more. Indeed, less, because Jack Bogle's "Cost Matters Hypothesis" is right: *"Gross returns in the financial markets minus the costs of financial intermediation equal the net returns actually delivered to investors."*[5] And if we take away the low-cost index funds, what's left are the active managers, whose investment management fees are much higher. In Bogle's phrase, it's humble arithmetic—index investors will win. Nonetheless, smart beta strategies claim to beat the market by 2%. What gives?

Clearly, there is no way to determine precisely who trades with fundamentals-weighted and other smart beta strategies. Conceptually, however, investors taking the other side of smart beta trades would be those who buy stocks after they rise in price and sell after they fall. They are trend-following, performance-chasing investors; we consider them "procyclical" investors. Smart beta strategies are countercyclical, periodically rebalancing out of what has been working and into less favored stocks. We believe actively managed portfolios, cap-weighted index funds, and many ETFs trade procyclically, but in a larger sense smart beta strategies' most important trading partners are the end investors—the clients who channel cash to investment vehicles.

Procyclical Investors

Many investors are procyclical. Russ Kinnel of Morningstar published "Mind the Gap 2014," updating his seminal 2005 article that compared reported mutual fund performance with the returns actually earned by the average investor. The gap—the difference between the fund's

"For one investor to profit, another must lose."

total time-weighted return and the average investor's money-weighted return—reflects the value added (or subtracted) by investors' decisions to move cash into and out of funds. In other words, the gap is the return impact of investors' market timing decisions (**Table 2**).[6]

The conclusion is not unexpected, but it's still stunning. Over the past 10 years, the average investor earned a return that was 2.5% worse than the return of the average fund they invested in! The drag ranged from –1.7% for U.S. equities to –3.1% for sector funds. Kinnel's findings are consistent over different long-term time periods and across all asset classes. Of course, these are retail investors; one might expect to find that they are prone to run as a herd. But several studies reported in peer-reviewed journals suggest that institutional investors are no less susceptible to the same procyclical behavior, resulting in a return drag between 1% and 2%.[7]

Investors chase returns. Cash streams into outperforming strategies and equity styles. In particular, more capital is channeled to the managers who recently achieved superior results, and so the managers themselves become *de facto* trend chasers, adding to their positions in the same stocks or the same type of stock already in their portfolios. The stocks they buy have lately had strong returns—they are, after all, the very stocks driving the managers' outperformance—and they are probably expensive.

Clearly, there is a common thread when the returns of all kinds of investors (retail and institutional) in all asset classes (stocks, bonds, commodities, and alternatives) fall behind the long-term returns of the funds they invest in. Why do investors persist in costly procyclical behavior? The short answer, as Chris Brightman wrote in this space last month, is that they prefer to do what is comfortable. Buying winners and avoiding losers is a chronic pattern of financial behavior.

Table 2. The Gap Between Fund and Investor Returns

	10-Year Returns through December 31, 2013		
	Total Return (%)	**Investor Return (%)**	**Returns Gap (%)**
All Funds	7.30	4.81	−2.49
US Equity	8.18	6.52	−1.66
Sector Equity	9.46	6.32	−3.14
Balanced	6.93	4.81	−2.12
International Equity	8.77	5.76	−3.01
Taxable Bond	5.39	3.15	−2.24
Municipal	3.53	1.65	−1.88
Alternative	0.96	−1.15	−2.11

Source: Research Affiliates based on Kinnel (2014).

Client Behavior: A Case Study

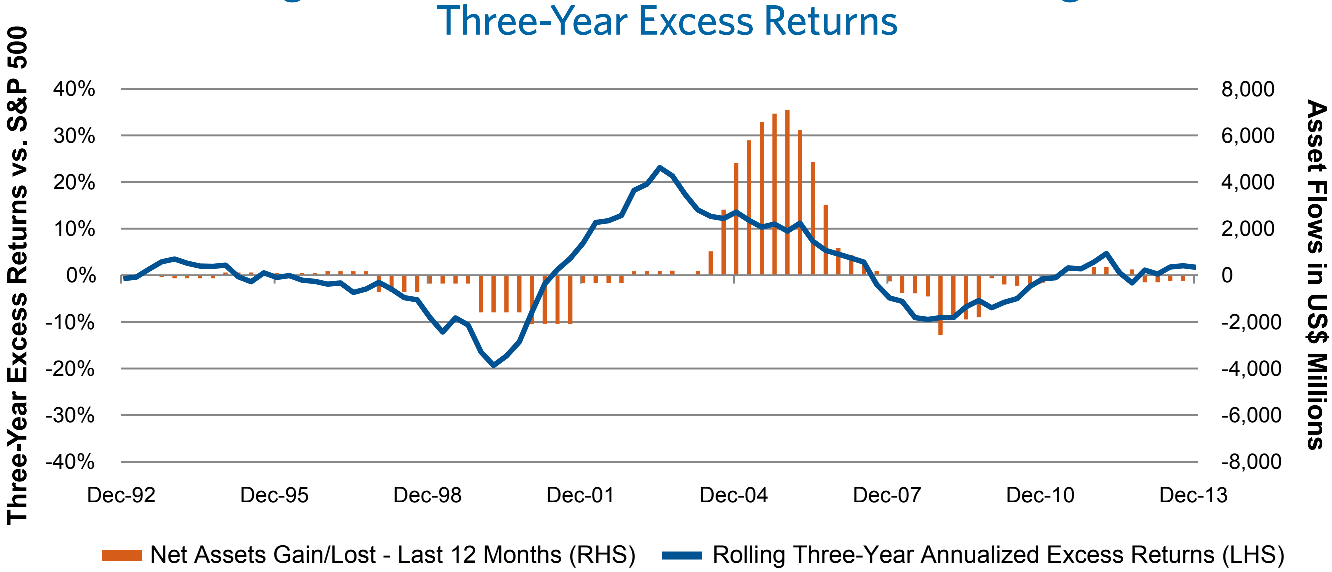
For a more focused investigation of clients' market timing decisions, we looked at a highly reputable asset management boutique with a long track record in value investing. A fund launched by the firm more than 20 years ago has an annualized inception-to-date return that is 1.4% higher than the S&P 500 Index return for the same period. But this exceedingly favorable long-term result came with quite a bit of short-term variability, as one would expect of a value strategy.[8]

The solid line in **Figure 1** shows the cyclicality of the fund's annualized three-year excess returns, which range between 20% below and 23% above the corresponding S&P 500 return. It comes as no surprise that the fund's investors responded to these peaks and troughs in relative performance in a most procyclical manner. The strategy's net asset flows, represented by the columns, track its trailing excess returns quite closely. Higher excess returns are followed by net asset inflows; lower excess returns induce outflows. Moreover, inflows tend to continue rising after performance has peaked (investors buy high), and outflows tend to be greatest after performance has hit bottom (investors sell low).

Smart beta strategies are not taking their 2% excess returns directly from this or any other financial intermediary. As we noted, the long-term excess return of the fund used in this example is positive. Instead, smart beta strategies are earning their value-added returns from end investors whose procyclical behavior forces the manager to sell stocks in bad times (usually when they are at the bottom of a cycle and cheap) and buy stocks in good times (when these stocks have outperformed and are expensive). Smart beta managers and other countercyclical or contrarian investors are the counterparties to those trades.

We took one more step and looked at the largest positions held by the value fund in question at the end of 2008 (**Table 3**). These are stocks they might have been compelled to sell during a period of significant outflows. We further observed that, in the course of rebalancing early in 2009, a fundamentally weighted U.S. large company strategy purchased two-thirds of the value fund's top holdings (the shaded companies in Table 3). And we found much the same phenomenon with other managers who similarly experienced procyclical client behavior. Smart beta strategies were buying the stocks these managers were forced to sell. This is the 2% excess return payment in action.

Figure 1. Value Fund Net Asset Flows vs. Trailing Three-Year Excess Returns



Source: Research Affiliates based on data from eVestment Alliance.

Table 3. Top Holdings of a Value Fund as of December 31, 2008

Company*	Weight (% of Total)
CA	5.76
Philip Morris	5.02
Microsoft	4.60
Bank of America	4.29
Merck & Co.	4.27
Exelon Corp.	4.13
Eli Lilly and Co.	3.79
JPMorgan Chase & Co.	3.58
Home Depot	3.33
Tyco International	3.03
Wells Fargo	2.80
Tyco Electronics	2.67
Safeway	2.67
FPL Group	2.60
Bristol-Myers Squibb	2.40
PACCAR	2.27
Citigroup	2.25
Pfizer	2.10
Lorillard	2.05
eBay	1.78

*Shaded stocks were purchased in the first quarter 2009 rebalancing of a fundamentally weighted U.S. large company index.

Source: Research Affiliates based on data from FactSet.

Procyclical Investing: Can It Last?

In the United States, the sport of boxing has lost much of the popularity it still enjoyed when Sugar Ray Leonard squared off against Roberto Durán. Certainly there are fewer local boxing gyms to supply new generations of trained fighters, perhaps because nowadays many parents encourage their children to take up less dangerous sports. Procyclical investing, however, is as prevalent as ever. To be sure, procyclical investors can prevail over many rounds, and when they win their behavior is reinforced. But researchers in the field of behavioral finance have also identified a series of cognitive biases and psychological inclinations underlying investors' penchant for going along with the emotional crowd. They include overconfidence, a compelling need for social validation, and a confirmation bias that leads people to discount or disregard contrary evidence. Because it is hard for people to change their habitual ways of thinking, we do not anticipate a mass movement toward countercyclical investing anytime soon. And as long as investors persist in following trends and chasing returns, someone will throw in the towel and take the other side of smart beta trades.

> *"We do not anticipate a mass movement toward countercyclical investing."*

Endnotes

1. Research Affiliates did not coin the popular term smart beta. We are using it as a convenient way to refer to non-price-weighted, rules-based investment strategies in which periodic rebalancing is the central mechanism for capturing premium returns.
2. The risk-adjusted returns may differ. For example, over the 1964–2012 period, a portfolio whose stock weights were based on the standard deviation σ of monthly returns over five years (thus, a high-volatility portfolio) had a Sharpe ratio of 0.36. The inverse portfolio whose stocks were weighted by $1/\sigma$ (therefore, a low-volatility portfolio) had a Sharpe ratio of 0.47. See Arnott, Hsu, Kalesnik, and Tindall (2013).
3. This does not mean the trades are precisely the same. Different weighting methods will naturally result in somewhat different rebalancing transactions. Portfolios are also likely to operate on different rebalancing schedules.
4. We also looked at full portfolios for a fundamentally weighted and an equal-weighted index and found they executed countercyclical trades (buying underperforming stocks and selling outperforming stocks) in 75% of their stock positions at the latest reconstitution.
5. Bogle (2005), p. 22. Bogle's emphasis.
6. Because investment managers generally don't control the timing and magnitude of external cash flows (that is, investors' contributions and withdrawals), they quite properly report returns on a time-weighted basis. The investors' experience, however, is reflected by their individual money-weighted returns, which do take external cash flows into account. Kinnel uses industry aggregate cash flow information to estimate the average investor's actual return. For more information about time-weighted and money-weighted rates of return, see Bailey, Richards, and Tierney (2007), pp. 724–729.
7. See Stewart, Neumann, Knittel, and Heisler (2009) and Goyal and Wahal (2008).
8. We also analyzed the results against an appropriate value style index and found nearly identical results. We chose to show the S&P 500 here because we wanted to display the cyclicality of excess returns against the broad market.

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Performance Update

FTSE RAFI® Equity Index Series*

TOTAL RETURN AS OF 3/31/14	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	5 YEAR	10 YEAR	10 YEAR STANDARD DEV.
FTSE RAFI® All World 3000[1]	TFRAW3	1.97%	21.39%	9.11%	21.33%	9.70%	18.60%
MSCI All Country World[2]	GDUEACWF	1.21%	17.17%	9.14%	18.43%	7.53%	16.63%
FTSE RAFI® Developed ex US 1000[3]	FRX1XTR	1.73%	24.05%	6.38%	18.18%	8.15%	20.31%
MSCI World ex US[4]	MLCUWXUG	0.86%	17.00%	6.80%	16.44%	7.21%	18.27%
FTSE RAFI® Developed ex US Mid Small[5]	TFRDXUSU	2.74%	18.45%	7.26%	21.86%	10.31%	18.77%
MSCI World ex US Small Cap[6]	GCUDWXUS	3.55%	21.56%	7.95%	21.94%	8.80%	20.17%
FTSE RAFI® Emerging Markets[7]	TFREMU	-1.63%	-5.11%	-5.51%	13.33%	12.69%	24.40%
MSCI Emerging Markets[8]	GDUEEGF	-0.37%	-1.07%	-2.54%	14.83%	10.45%	23.96%
FTSE RAFI® 1000[9]	FR10XTR	2.49%	23.25%	15.38%	26.41%	9.33%	17.18%
Russell 1000[10]	RU10INTR	2.05%	22.41%	14.75%	21.73%	7.80%	15.01%
S&P 500[11]	SPTR	1.81%	21.86%	14.66%	21.16%	7.42%	14.71%
FTSE RAFI® US 1500[12]	FR15USTR	1.61%	28.91%	14.41%	30.86%	11.33%	21.78%
Russell 2000[13]	RU20INTR	1.12%	24.90%	13.18%	24.31%	8.53%	19.74%
FTSE RAFI® Europe[14**]	TFREUE	3.95%	26.12%	8.99%	18.65%	7.61%	17.51%
MSCI Europe[15**]	GDDLE15	2.19%	16.65%	10.12%	17.34%	6.79%	14.45%
FTSE RAFI® Australia[16**]	FRAUSTR	2.22%	13.64%	11.15%	14.71%	10.12%	13.60%
S&P/ASX 200[17**]	ASA51	2.09%	13.46%	8.54%	13.39%	9.37%	13.66%
FTSE RAFI® Canada[18**]	FRCANTR	5.49%	17.08%	5.98%	16.65%	9.52%	13.42%
S&P/TSX 60[19**]	TX60AR	5.52%	15.73%	3.53%	12.36%	8.30%	13.84%
FTSE RAFI® Japan[20**]	FRJPNTR	-7.35%	20.28%	12.82%	12.10%	3.19%	19.71%
MSCI Japan[21**]	GDDLJN	-7.38%	18.04%	13.49%	11.46%	2.22%	19.17%
FTSE RAFI® UK[22**]	FRGBRTR	-1.15%	9.16%	9.11%	16.89%	8.54%	15.65%
MSCI UK[23**]	GDDLUK	-1.47%	6.39%	7.62%	15.10%	7.88%	13.72%

*To see the complete series, please go to: http://www.ftse.com/Indices/FTSE_RAFI_Index_Series/index.jsp.

**The above indices have been restated to reflect the use of local currencies for all single country strategies and EUR for Europe regional strategies rather than USD.

Russell Fundamental Index Series*

TOTAL RETURN AS OF 3/31/14	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	5 YEAR	10 YEAR	10 YEAR STANDARD DEV.
Russell Fundamental Global Index Large Company[24]	RUFGLTU	1.92%	21.92%	10.38%	20.71%	9.86%	16.93%
MSCI All Country World Large Cap[25]	MLCUAWOG	0.94%	16.88%	9.15%	17.88%	7.17%	16.33%
Russell Fundamental Developed ex US Index Large Company[26]	RUFDXLTU	2.57%	26.40%	7.69%	17.57%	8.75%	18.41%
MSCI World ex US Large Cap[27]	MLCUWXUG	0.52%	16.69%	6.81%	16.06%	6.93%	18.16%
Russell Fundamental Developed ex US Index Small Company[28]	RUFDXSTU	2.32%	20.48%	9.83%	22.00%	10.28%	18.09%
MSCI World ex US Small Cap[6]	GCUDWXUS	3.55%	21.56%	7.95%	21.94%	8.80%	20.17%
Russell Fundamental Emerging Markets[29]	RUFGETRU	-1.84%	-0.09%	-2.05%	16.49%	13.83%	23.94%
MSCI Emerging Markets[8]	GDUEEGF	-0.37%	-1.07%	-2.54%	14.83%	10.45%	23.96%
Russell Fundamental US Index Large Company[30]	RUFUSLTU	2.15%	22.04%	15.55%	24.20%	9.69%	15.57%
Russell 1000[10]	RU10INTR	2.05%	22.41%	14.75%	21.73%	7.80%	15.01%
S&P 500[11]	SPTR	1.81%	21.86%	14.66%	21.16%	7.42%	14.71%
Russell Fundamental US Index Small Company[31]	RUFUSSTU	2.62%	26.95%	14.62%	30.22%	12.33%	20.78%
Russell 2000[13]	RU20INTR	1.12%	24.90%	13.18%	24.31%	8.53%	19.74%
Russell Fundamental Europe[32**]	RUFEUTE	3.65%	23.66%	9.26%	18.80%	8.77%	15.84%
MSCI Europe[15**]	GDDLE15	2.19%	16.65%	10.12%	17.34%	6.79%	14.45%

*To see the complete series, please go to: http://www.russell.com/indexes/data/Fundamental/About_Russell_Fundamental_indexes.asp.

**The above indices have been restated to reflect the use of local currencies for all single country strategies and EUR for Europe regional strategies rather than USD.

Performance Update

Fixed Income/Alternatives

TOTAL RETURN AS OF 3/31/14	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	5 YEAR	10 YEAR	10 YEAR STANDARD DEV.
RAFI® Bonds US Investment Grade Master[33]	—	2.97%	0.93%	5.96%	9.34%	5.57%	5.82%
ML Corporate Master[34]	C0A0	2.97%	1.42%	6.04%	9.89%	5.28%	5.95%
RAFI® Bonds US High Yield Master[35]	—	2.61%	5.42%	8.60%	17.82%	9.15%	9.45%
ML Corporate Master II High Yield BB-B[36]	H0A4	2.98%	6.92%	8.51%	15.80%	7.86%	9.15%
RAFI® US Equity Long/Short[37]	—	1.19%	7.83%	3.29%	11.80%	4.93%	11.26%
1-Month T-Bill[38]	GB1M	0.01%	0.03%	0.04%	0.07%	1.48%	0.53%
FTSE RAFI® Global ex US Real Estate[39]	FRXR	-2.61%	2.04%	4.61%	21.67%	—	—
FTSE EPRA/NAREIT Global ex US[40]	EGXU	-0.32%	-2.58%	5.45%	18.49%	—	—
FTSE RAFI® US 100 Real Estate[41]	FRUR	8.15%	2.27%	10.08%	33.19%	—	—
FTSE EPRA/NAREIT United States[42]	UNUS	10.15%	4.58%	10.52%	28.69%	—	—
Citi RAFI Sovereign Developed Markets Bond Index Master[43]	CRFDMU	2.49%	2.98%	3.82%	5.41%	5.31%	7.32%
Merrill Lynch Global Governments Bond Index II[44]	W0G1	2.68%	1.04%	2.00%	3.92%	4.28%	6.70%
Citi RAFI Sovereign Emerging Markets Local Currency Bond Index Master[45]	CRFELMU	1.62%	-9.69%	—	—	—	—
JPMorgan GBI-EM Global Diversified[46]	JGENVUUG	1.90%	-7.14%	—	—	—	—

Sources and Method: All index returns are calculated using total return data from Bloomberg and FactSet. Returns for all single country strategies and Europe regional strategies are in local currency. All other returns are in USD. Annualized returns are geometrically linked returns, calculated using monthly data. Annualized standard deviation is calculated using sample standard deviation and monthly return data.

Definition of Indices

(1) The FTSE RAFI® All World 3000 Index is a measure of the largest 3,000 companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value), across both developed and emerging markets.

(2) The MSCI All Country World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

(3) The FTSE RAFI® Developed ex US 1000 Index is a measure of the largest 1000 non U.S. listed, developed market companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(4) The MSCI World ex US Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets, excluding the United States.

(5) The FTSE RAFI® Developed ex US Mid Small Index tracks the performance of small and mid-cap companies domiciled in developed international markets (excluding the United States), selected and weighted based on the following four fundamental measures of firm size: sales, cash flow, dividends and book value.

(6) The MSCI World ex US Small Cap Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of small cap developed markets, excluding the United States.

(7) The FTSE RAFI® Emerging Markets Index comprises the largest 350 Emerging Market companies selected and weighted using fundamental factors (sales, cash flow, dividends, book value).

(8) The MSCI Emerging Markets Index is an unmanaged, free-float-adjusted cap-weighted index designed to measure equity market performance of emerging markets.

(9) The FTSE RAFI® 1000 Index is a measure of the largest 1,000 U.S. listed companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(10) The Russell 1000 Index is a market-capitalization-weighted benchmark index made up of the 1,000 highest-ranking U.S. stocks in the Russell 3000.

(11) The S&P 500 Index is an unmanaged market index that focuses on the large-cap segment of the U.S. equities market.

(12) The FTSE RAFI® US 1500 Index is a measure of the 1,001st to 2,500th largest U.S. listed companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(13) The Russell 2000 is a market-capitalization weighted benchmark index made up of the 2,000 smallest U.S. companies in the Russell 3000.

(14) The FTSE RAFI® Europe Index is comprised of all European companies listed in the FTSE RAFI® Developed ex U.S. 1000 Index, which in turn is comprised of the largest 1,000 non U.S. listed developed market companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(15) The MSCI Europe Index is a free-float adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in Europe.

(16) The FTSE RAFI® Australia Index is comprised of all Australian companies listed in the FTSE RAFI® Developed ex U.S. 1000 Index, which in turn is comprised of the largest 1,000 non U.S. listed developed market companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(17) The S&P/ASX 200 Index, representing approximately 78% of the Australian equity market, is a free-float-adjusted, cap-weighted index.

(18) The FTSE RAFI® Canada Index is comprised of all Canadian companies listed in the FTSE RAFI® Developed ex U.S. 1000 Index, which in turn is comprised of the largest 1,000 non U.S. listed developed market companies, selected andweighted using fundamental factors; (sales, cash flow, dividends, book value).

(19) The S&P/Toronto Stock Exchange (TSX) 60 is a cap-weighted index consisting of 60 of the largest and most liquid (heavily traded) stocks listed on the TSX, usually domestic or multinational industry leaders.

(20) The FTSE RAFI® Japan Index is comprised of all Japanese companies listed in the FTSE RAFI® Developed ex U.S. 1000 Index, which in turn is comprised of the largest 1,000 non U.S. listed developed market companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(21) The MSCI Japan Index is an unmanaged, free-float-adjusted cap-weighted index that aims to capture 85% of the publicly available total market capitalization of the Japanese equity market.

(22) The FTSE RAFI® UK Index is comprised of all UK companies listed in the FTSE RAFI® Developed ex U.S. 1000 Index, which in turn is comprised of the largest 1,000 non-U.S. listed developed market companies, selected and weighted using fundamental factors; (sales, cash flow, dividends, book value).

(23) The MSCI UK Index is an unmanaged, free-float-adjusted cap-weighted index that aims to capture 85% of the publicly available total market capitalization of the British equity market.

(24) The Russell Fundamental Global Index Large Company is a measure of the largest companies, selected and weighted using fundamental factors; (adjusted sales, retained cash flow, dividends + buybacks), across both developed and emerging markets.

(25) The MSCI All Country World Large Cap Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

(26) The Russell Fundamental Developed ex US Large Company is a subset of the Russell Fundamental Developed ex US Index, and is a measure of the largest non-U.S. listed developed country companies, selected and weighted using fundamental factors; (adjusted sales, retained cash flow, dividends + buybacks).

(27) The MSCI World ex US Large Cap Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of large cap-developed markets, excluding the United States.

(28) The Russell Fundamental Developed ex US Index Small Company is a subset of the Russell Fundamental Developed ex US Index, and is a measure of small non-U.S. listed developed country companies, selected and weighted using fundamental factors; (adjusted sales, retained cash flow, dividends + buybacks).

(29) The Russell Fundamental Emerging Markets Index is a measure of Emerging Market companies, selected and weighted using fundamental factors; (adjusted sales, retained cash flow, dividends + buybacks).

(30) The Russell Fundamental U.S. Index Large Company is a subset of the Russell Fundamental US Index, and is a measure of the largest U.S. listed companies, selected and weighted using fundamental measures; (adjusted sales, retained cash flow, dividends + buybacks).

(31) The Russell Fundamental US Index Small Company is a subset of the Russell Fundamental US Index, and is a measure of U.S. listed small companies, selected and weighted using fundamental measures; (adjusted sales, retained cash flow, dividends + buybacks).

(32) The Russell Fundamental Europe Index is a measure of European companies, selected and weighted using fundamental factors; (adjusted sales, retained cash flow, dividends + buybacks).

(33) The RAFI® Bonds US Investment Grade Master Index is a U.S. investment-grade corporate bond index comprised of non-zero fixed coupon debt with maturities ranging from 1 to 30 years issued by publicly traded companies. The issuers held in the index are weighted by a combination of four measures of their fundamental size—sales, cash flow, dividends, and book value of assets.

(34) The Merrill Lynch U.S. Corporate Master Index is representative of the entire U.S. corporate bond market. The index includes dollar-denominated investment-grade corporate public debt issued in the U.S. bond market.

(35) The RAFI® Bonds US High Yield Master is a U.S. high-yield corporate bond index comprised of non-zero fixed coupon debt with maturities ranging from 1 to 30 years issued by publicly traded companies. The issuers held in the index are weighted by a combination of four measures of their fundamental size—sales, cash flow, dividends, and book value of assets.

(36) The Merrill Lynch Corporate Master II High Yield BB-B Index is representative of the U.S. high yield bond market. The index includes domestic high-yield bonds, including deferred interest bonds and payment-in-kind securities. Issues included in the index have maturities of one year or more and have a credit rating lower than BBB-/Baa3, but are not in default.

(37) The RAFI® US Equity Long/Short Index utilizes the Research Affiliates Fundamental Index® (RAFI®) methodology to identify opportunities that are implemented through long and short securities positions for a selection of U.S. domiciled publicly traded companies listed on major exchanges. Returns for the index are collateralized and represent the return of the strategy plus the return of a cash collateral yield.

(38) The 1-Month T-bill return is calculated using the Bloomberg Generic 1-month T-bill. The index is interpolated based off of the currently active U.S. 1 Month T-bill and the cash management bill closest to maturing 30 days from today.

(39) The FTSE RAFI® Global ex US Real Estate Index comprises 150 companies with the largest RAFI fundamental values selected from the constituents of the FTSE Global All Cap ex U.S. Index that are classified by the Industry Classification Benchmark (ICB) as Real Estate.

(40) The FTSE EPRA/NAREIT Global ex US Index is a free float-adjusted index, and is designed to represent general trends in eligible listed real estate stocks worldwide, excluding the United State. Relevant real estate activities are defined as the ownership, trading and development of income-producing real estate.

(41) The FTSE RAFI® US 100 Real Estate Index comprises of the 100 U.S. companies with the largest RAFI fundamental values selected from the constituents of the FTSE USA All Cap Index that are classified by the Industry Classification Benchmark (ICB) as Real Estate.

(42) The FTSE EPRA/NAREIT United States Index is a free float-adjusted index, is a subset of the EPRA/NARIET Global Index and the EPRA/NAREIT North America Index and contains publicly quoted real estate companies that meet the EPRA Ground Rules. EPRA/NARIET Index series is seen as the representative benchmark for the real estate sector.

(43) The Citi RAFI Sovereign Developed Markets Bond Index Series seeks to reflect exposure to the government securities of a universe of 22 developed markets. By weighting components by their fundamentals, the indices aim to represent each country's economic footprint and proxies for its ability to service debt. Performance may be positive or negative. Past performance is not an indication of future results. Historical data used from index inception date of 09/30/2001 (index = 100) until 12/31/2011. Live data used since 01/01/2012.

(44) The Merrill Lynch Global Government Bond Index II tracks the performance of investment grade sovereign debt publicly issued and denominated in the issuer's own domestic market
and currency.

(45) The Citi RAFI Sovereign Emerging Markets Local Currency Bond Index Series seeks to reflect exposure to the government securities of a universe of 15 emerging markets. By weighting components by their fundamentals, the indices aim to represent each country's economic footprint and proxies for its ability to service debt. Performance may be positive or negative. Past performance is not an indication of future results. Historical data used from index inception date of 09/30/2011 (index = 100) until 12/31/2011. Live data used since 1/1/2012.

(46) The JPMorgan GBI-EM Diversified Index seeks exposure to the local currency sovereign debt of over 15 countries in the emerging markets.

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