FUNDAMENTALS

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"Despite all of the intellect and adaptive learning that we bring to bear, sadly, human beings with our changing risk aversion are poorly suited as stewards for managing long-term returns."

Why We Don't Rebalance

For investors, the $1 million question is, "Why don't all of us rebalance?" Research shows compellingly the long-term benefit of rebalancing, yet anecdotal evidence suggests that most investors do not rebalance their portfolios—that is, buying assets that have become cheap and selling assets that have become expensive. In fact, many investors do the exact opposite!

Why is it so hard for investors to rebalance? The answer is less about "behavioral mistakes" and more about the fact that "rational" individuals care more about other things than simply maximizing investment returns. Perfectly rational individuals exhibit changing risk aversion that makes it hard for them to rebalance into high return assets, which have suffered steep recent price declines. The unwillingness to buy low and sell high is not characteristic of just retail investors, who are unaware of the finance literature and market history. Very sophisticated institutional investors, advised by investment consultants and academics, are prone to the very same behavior.[1]

This issue of *Fundamentals* reviews the empirical evidence for return improvement from rebalancing, as well as the reasons why most sensible investors don't do it.

Why Rebalance?

A significant body of financial research has shown that asset classes exhibit long-horizon price mean-reversion.[2] When an asset class falls in price, resulting in a more attractive valuation level relative to history, it is more likely to experience high subsequent returns. For example, when the S&P 500 Index falls in price, its dividend yield increases; empirically the subsequent five-year return on the S&P 500 tends to be significantly above average.[3] Similarly, when corporate bond prices fall as credit spreads blow out, the forward return on corporate bonds increases.[4] Price mean-reversion in asset returns suggests that a disciplined rebalancing approach in asset allocation that responds to changing valuation levels would improve portfolio returns in the long-run.[5]

So, if "buy low and sell high" works so well, why don't investors rebalance? Research suggests that our risk attitude interacts in a predictable way with our wealth level and thereby influences our decision-making with respect to rebalancing. Specifically, investors tend to become more risk averse and, therefore, unwilling to add risk to their portfolios despite lower prices when their portfolio wealth declines. Investors tend to become more risk seeking and, therefore, more willing to speculate even at high prices when their portfolio wealth increases.[6]

The following illustration provides an intuitive way to understand this behavior. Consider a household with a certain level of income and wealth. This household anchors its standard of living (expenditure pattern) to its income/

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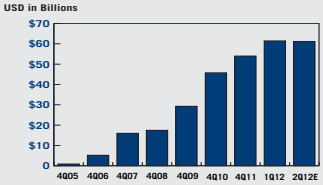
RAFI® Managed Assets*



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wealth profile. When positive fundamental shocks (such as a surprise jump in GDP or corporate earnings growth) hit the market, stock prices go up. A string of positive economic surprises, and the resulting equity bull market, can lead to a substantial increase in investor wealth. This market environment is also generally characterized by low unemployment, strong wage increases, healthy bonuses, and appreciation in real estate value.

The investment gain coupled with stronger income affords the household the "option" to take an extra vacation, upgrade to a larger house and/or retire earlier. The higher household income and the substantial increase in wealth also allow the household to take on more risk without affecting its standard of living and retirement prospects. The investor compartmentalizes the newfound wealth as a "windfall"—analogous to "house money" from casino winnings. Often, the investor speculates with this windfall; this is not dissimilar to the increase in aggressive betting when a gambler has just won big and is playing with "the house's" money. The house money effect can explain why investors do not rebalance away from equities after a major rally, even though higher prices significantly reduce expected forward returns.

On the flip side, when there is a string of negative economic surprises, the resulting bear market can destroy substantial household wealth. Bear markets often coincide with high unemployment, weak wages, no bonuses, and stagnant to declining home values. The decline in income and loss of wealth pose appreciable threats to the household's standard of living. Indeed, any further loss in portfolio value could cause a permanent and very unpleasant adjustment to the household's quality of life and retirement planning. A severe decline might mean the investor is no longer able to afford college tuition for his children or, worse, needs to sell his house or delay retirement significantly. These events do not make for comfortable bedside conversations at an already stressful time. "Honey, I lost an additional $50,000 because I rebalanced and bought more BofA on its way down. But don't worry, the price is likely to mean-revert higher soon." This isn't a good thing to say when one already has to cancel that romantic European getaway and has no prospect of a year-end bonus. Unsurprisingly, the investor becomes very risk averse to further volatility in his wealth and is unwilling to take on investment risk even in very attractively priced assets.

> *"Supposedly sophisticated investors do not behave in a meaningfully different way... they are not better positioned to capture the potential "free lunch."*

Similar behaviors are found among investment fiduciaries. After large market declines (which often are followed by lowered interest rates, which boost the market value of pension liabilities), pension funds are more likely to become underfunded. Any further downside volatility to the funding ratio could trigger a mandatory contribution or other adverse regulatory actions. In addition, it is also human tendency to be more blame-oriented during a time of stress, made worse by significant loss in personal wealth.[7] This environment does not tolerate short-term negative outcomes even when they result from a sensible investment with high long-term returns. As a result, fiduciaries also tend to be significantly more risk averse after a bear market and are generally unwilling to rebalance into risky assets after significant price declines despite the better returns.

Risk Premium or Free Lunch?

There is strong evidence that naïve investors chase trends—for example, they over-extrapolate a recent string of good or bad news and/or follow prices in an uninformed way.[8] This behavior results in irrational buying and selling, which push prices away from their rational valuations and create "alpha" opportunities for others. The truth is, supposedly sophisticated investors do not behave in a meaningfully different way; contrary to the standard claim, they are not better positioned to capture the potential "free lunch." Time-varying risk aversion is a natural consequence of the business cycle and the associated equity market bull/bear cycle. Rational investors are too risk averse in down markets to buy stocks at attractive prices and too risk seeking in up markets to reduce their equity allocation in response to unattractive forward returns. As a result, the pattern of price mean-reversion in equities (and more broadly in all asset classes) does not become arbitraged away by "rational" investors.

Price mean-reversion in asset class returns generates what is often referred to as rebalancing return. When investors rebalance into fallen assets and away from safe assets, they also rebalance into high forward return assets and away from low forward return assets. This practice generates better portfolio performance over time than a buy-and-hold approach. Given herding and over-extrapolation by naïve investors as well as time-varying risk aversion for rational investors, the re-

balancing return can be thought of as part "free lunch" and part "risk premium." The free lunch comes from trading against behavioral mistakes of unsophisticated investors. The "risk premium" comes from bearing discomfort associated with taking on more risk when one is least able to bear risk.[9]

Should You Rebalance?

If the $1 million question is, "Why don't investors rebalance?" then the $5 million question is, "Should you rebalance?" Statistically, you are likely to outperform in the long run if you rebalance in response to major price movements. However, when you buy risk assets during economic distress, there is a significant probability that, in the interim, your portfolio may suffer a greater decline than if you didn't rebalance. In the short run, your probability of being fired as a fiduciary, of being blamed by clients you advise, and, most importantly, of marital strife, becomes moderately higher when you rebalance.

So who should rebalance? If you have over-saved significantly relative to your spending needs, rebalancing and the associated increase in short-term risk would not threaten your standard of living. For aggressive savers, rebalancing is a fantastic strategy. If you work at an organization that is truly concerned only about long-term investment performance and unconcerned by (and hold you above blame for) the short-term fluctuations, then rebalancing is a fantastic strategy for you. Other than that, one should best remember Keynes's greatest insight (modified here for our purpose): *the market can stay irrational longer than you or I can remain employed, or for that matter, happily married.*[10]

Therefore, it isn't so obvious that one "would" rebalance even if one were convinced of the price mean-reversion in asset returns. European equities, specifically financials, are heavily discounted—providing unprecedented yields and high expected returns. Would you rebalance with conviction into European equities? Into financials? The trepidation we experience associated with these investments doesn't stem from our superior ability to forecast a disorderly breakup of the European Union. After all, prices are largely disciplined by Wall Street prop traders and hedge fund managers and reflect all relevant risk scenarios and probabilities. We don't rebalance because we are first and foremost human beings with a multitude of considerations before we are investors and fiduciaries optimizing for long-term expected returns. This is perhaps why it has become fashionable for wise men to recommend "institutionalized rebalancing"—making rebalancing part of pension fund governance instead of leaving the decision to investment officers and fund trustees.[11] Despite all of the intellect and adaptive learning that we bring to bear, sadly, human beings with our changing risk aversion are poorly suited as stewards for managing long-term returns.

Endnotes

1. See Ang and Kjaer (2011) which provides case studies on pension fund and sovereign wealth fund investment behaviors.
2. The price mean-reversion is also known as the time-series value effect. See Cochrane (1999) for a summary of the literature on long horizon mean-reversion.
3. See Campbell and Shiller (1998) for an excellent discussion on predicting stock market returns using the dividend ratio. For a succinct treatment of the same topic, see Arnott (2003).
4. See Bernanke (1990).
5. See Arnott and von Germeten (1983) and Arnott and Henriksson (1989) for two of the earliest practitioner papers on rebalancing as a successful asset allocation strategy. See Brennan, Schwartz, and Lagnado (1997) for an early academic treatment on asset allocation when returns are mean-reverting and predictable. See also Campbell and Viceira (2002), Campbell, Cocco, Gomes, Maenhout, and Viceira (2001), and Xia (2002). For an excellent survey on the topic, see Campbell and Viceira (2002).
6. See Campbell and Cochrane (1999) for a model on time-varying risk aversion driven by business cycle shocks to household standard of living.
7. See Cohen and Janicki-Deverts (2012).
8. See Odean (1999).
9. See Arnott (2012).
10. The original quote from Keynes is "the market can stay irrational, longer than you or I can stay solvent."
11. See Ang and Kjaer (2011) and Arnott (2012).

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Performance Update

FTSE RAFI® Equity Index Series*

TOTAL RETURN AS OF 6/30/12	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	ANNUALIZED 5 YEAR	ANNUALIZED 10 YEAR	10 YEAR VOLATILITY
FTSE RAFI® All World 3000[1]	TFRAW3	3.50%	-10.69%	10.77%	-1.55%	8.86%	19.50%
MSCI All Country World[2]	GDUEACWF	6.01%	-5.96%	11.36%	-2.17%	6.27%	17.67%
FTSE RAFI® Developed ex US 1000[3]	FRX1XTR	0.42%	-18.98%	4.85%	-5.40%	6.86%	21.03%
MSCI World ex US Large Cap[4]	MLCUWXUG	2.84%	-13.66%	6.71%	-5.19%	6.05%	19.17%
FTSE RAFI® Developed ex US Mid Small[5]	TFRDXUSU	2.42%	-14.16%	10.24%	-0.91%	11.88%	19.26%
MSCI World ex US Small Cap[6]	GCUDWXUS	3.48%	-15.42%	10.52%	-4.57%	9.11%	20.88%
FTSE RAFI® Emerging Markets[7]	TFREMU	1.93%	-17.22%	9.43%	1.97%	20.31%	25.29%
MSCI Emerging Markets[8]	GDUEEGF	4.12%	-15.67%	10.10%	0.21%	14.42%	24.69%
FTSE RAFI® 1000[9]	FR10XTR	7.75%	1.96%	18.52%	0.98%	6.93%	18.28%
Russell 1000[10]	RU10INTR	9.38%	4.37%	16.64%	0.39%	5.72%	16.06%
S&P 500[11]	SPTR	9.49%	5.45%	16.40%	0.22%	5.33%	15.84%
FTSE RAFI® US 1500[12]	FR15USTR	8.28%	-3.61%	21.21%	3.01%	10.02%	22.86%
Russell 2000[13]	RU20INTR	8.53%	-2.08%	17.80%	0.54%	7.00%	21.08%
FTSE RAFI® Europe[14]	TFREUE	-0.44%	-22.75%	3.32%	-7.70%	6.33%	23.93%
MSCI Europe[15]	GDDLE15	3.00%	-15.89%	6.96%	-6.37%	5.67%	21.33%
FTSE RAFI® Australia[16]	FRAUSTR	4.16%	-8.64%	15.65%	1.17%	13.96%	23.51%
S&P/ASX 200[17]	ASA51	3.31%	-10.68%	14.35%	-0.29%	13.62%	24.00%
FTSE RAFI® Canada[18]	FRCANTR	0.23%	-14.12%	12.00%	1.50%	13.53%	21.93%
S&P/TSX 60[19]	TX60AR	-1.18%	-15.34%	9.18%	-0.17%	12.04%	22.08%
FTSE RAFI® Japan[20]	FRJPNTR	0.74%	-9.53%	1.10%	-5.15%	4.41%	17.34%
MSCI Japan[21]	GDDLJN	3.23%	-7.07%	2.00%	-6.37%	2.63%	17.02%
FTSE RAFI® UK[22]	FRGBRTR	2.89%	-5.19%	10.24%	-5.54%	6.01%	20.64%
MSCI UK[23]	GDDLUK	3.37%	-4.56%	11.61%	-4.50%	5.78%	18.74%

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

Russell Fundamental Index Series*

TOTAL RETURN AS OF 6/30/12	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	ANNUALIZED 5 YEAR	ANNUALIZED 10 YEAR	10 YEAR VOLATILITY
Russell Fundamental Global Index Large Company[24]	RUFGLTU	4.32%	-7.70%	12.11%	-0.54%	9.19%	18.16%
MSCI All Country World Large Cap[25]	MLCUAWOG	6.20%	-5.19%	10.96%	-2.08%	5.78%	17.34%
Russell Fundamental Developed ex US Index Large Company[26]	RUFDXLTU	0.56%	-17.35%	5.60%	-4.32%	8.38%	19.47%
MSCI World ex US Large Cap[27]	MLCUWXUG	2.86%	-13.36%	6.40%	-5.14%	5.60%	19.07%
Russell Fundamental Developed ex US Index Small Company[28]	RUFDXSTU	4.48%	-10.89%	10.19%	-1.44%	11.51%	18.85%
MSCI World ex US Small Cap[6]	GCUDWXUS	3.48%	-15.42%	10.52%	-4.57%	9.11%	20.88%
Russell Fundamental Emerging Markets[29]	RUFGETRU	3.73%	-15.50%	12.42%	3.34%	19.93%	25.06%
MSCI Emerging Markets[8]	GDUEEGF	4.12%	-15.67%	10.10%	0.21%	14.42%	24.69%
Russell Fundamental US Index Large Company[30]	RUFUSLTU	8.32%	4.03%	18.36%	1.87%	7.52%	16.79%
Russell 1000[10]	RU10INTR	9.38%	4.37%	16.64%	0.39%	5.72%	16.06%
S&P 500[11]	SPTR	9.49%	5.45%	16.40%	0.22%	5.33%	15.84%
Russell Fundamental US Index Small Company[31]	RUFUSSTU	7.87%	-3.13%	22.30%	4.01%	10.82%	21.63%
Russell 2000[13]	RU20INTR	8.53%	-2.08%	17.80%	0.54%	7.00%	21.08%
Russell Fundamental Europe[32]	RUFEUTE	0.80%	-20.55%	6.42%	-5.59%	9.22%	22.94%
MSCI Europe[15]	GDDLE15	3.00%	-15.89%	6.96%	-6.37%	5.67%	21.33%

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

Performance Update

Fixed Income/Alternatives

TOTAL RETURN AS OF 6/30/12	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	ANNUALIZED 5 YEAR	ANNUALIZED 10 YEAR	10 YEAR VOLATILITY
RAFI® Bonds Investment Grade Master[33]	—	4.50%	10.56%	10.54%	8.50%	6.79%	6.04%
ML Corporate Master[34]	C0A0	4.87%	9.15%	10.63%	7.42%	6.59%	6.21%
RAFI® Bonds High Yield Master[35]	—	7.34%	9.46%	16.75%	10.87%	10.74%	10.59%
ML Corporate Master II High Yield BB-B[36]	H0A4	6.51%	7.14%	14.38%	7.51%	8.94%	9.55%
RAFI® US Equity Long/Short[37]	—	-3.58%	-8.22%	5.99%	-0.06%	4.07%	11.76%
1-Month T-Bill[38]	GB1M	0.02%	0.04%	0.08%	0.73%	1.68%	0.50%
FTSE RAFI® Global ex US Real Estate[39]	FRXR	13.01%	-12.82%	11.15%	—	—	—
FTSE EPRA/NAREIT Global ex US[40]	EGXU	15.53%	-5.37%	11.53%	—	—	—
FTSE RAFI® US 100 Real Estate[41]	FRUR	14.79%	6.43%	33.74%	—	—	—
FTSE EPRA/NAREIT United States[42]	UNUS	14.89%	12.50%	32.57%	—	—	—
Citi RAFI® Sovereign Developed Markets Bond Index Master[43]	CRFDMU	1.30%	2.07%	5.68%	6.65%	7.67%	7.86%
Merrill Lynch Global Governments Bond Index II[44]	W0G1	0.60%	3.39%	5.68%	7.43%	6.87%	7.14%
Citi RAFI® Sovereign Emerging Markets Local Currency Bond Index Master[45]	CRFELMU	7.15%	—	—	—	—	—
JPMorgan GBI-EM Global Diversified[46]	JGENVUUG	6.99%	—	—	—	—	—

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 Large Cap 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 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 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 23 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.
(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 14 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.
(46) The JPMorgan GBI-EM Diversified Index seeks exposure to the local currency sovereign debt of over 15 countries in the emerging markets.

Source: 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.