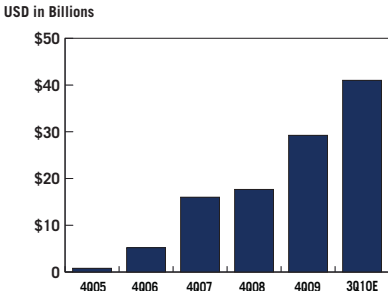
Fundamentals

John West

RAFI® Managed Assets*



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research® affiliates
620 newport center drive, suite 900
newport beach, ca 92660 usa
phone +1 (949) 325-8700
fax +1 (949) 554-0192
info@rallc.com
www.rallc.com

MEDIA CONTACTS
Tucker Hewes
Hewes Communications
+1 (212) 207-9451
tucker@hewescomm.com

Joel Chernoff
Research Affiliates
+1 (949) 325-8729
chernoff@rallc.com

A SMOOTHER RIDE FOR TARGET-DATE FUNDS

The invention of the autopilot was a critical advance in aviation history. Why? As flights got longer, pilots suffered from fatigue and made errors. They needed a stabilizer to keep the plane on course and adjust for changing conditions. When 21-year-old inventor Lawrence Sperry demonstrated his gyroscope-equipped autopilot at a 1914 Paris air safety show—both he and the plane's mechanic actually walked onto the plane's wings in mid-air, leaving no one in the cockpit—the spectators were stunned. Sperry became an international celebrity overnight.

In our industry, the target-date fund is intended to provide an autopilot for defined contribution participants—most of whom aren't any more qualified to pilot their investments than Wile E. Coyote is to jump into the cockpit of a 747. Target-date funds are simple investment solutions whose asset mix becomes more conservative and income oriented as the target date approaches. In theory, that ratcheting down of exposure to risky asset classes should be a good thing. In practice, as the last 10 years has illustrated, risk is not linearly rewarded. The "glide paths" of target-date funds assume constant risk premia from equities and other asset classes.

In this issue we explore another path utilizing the Fundamental Index® approach and find its inherent contra-trading produces a far better result. Furthermore, this approach is simple and inexpensive, two critical components of an effective 401(k) solution. In addition, we review how a simple tactical asset allocation approach would generate an even bigger retirement kitty.

Risk Premiums are not Constant

Considerable evidence exists that 401(k) investors do not make good investment decisions in their retirement plans. One study (by Munnell et al.) found that 401(k) plans experienced a 1% shortfall relative to defined benefit plans from 1988–2004 "due to poor timing and other investment mistakes." The study further explained that 401(k) participants *on average* make sensible investment choices, but on an individual basis are poorly diversified.[1] Other research found that employees tend to use a small number of investment options—typically three or four—and offering too many choices can cause "information overload" and can reduce participation and contribution rates.[2]

Target-date funds are designed to address these issues. They offer a pre-diversified, "one-stop shop" that adjusts asset allocation over time as retirement draws nearer. Equity bets—by far the largest risk source—are diversified by style (growth and value), size (large and small), and geography (U.S., developed ex-U.S., and emerging markets). But they miss the boat in one key area—they fail to adjust to changing market conditions. At some points,

continued on page two

investors are amply rewarded for placing their chips on stocks (the forward-looking equity risk premium is large); at other times—usually when markets are in a boom phase and stocks are overvalued—investors receive little reward for taking sizeable equity exposure (the equity risk premium is small).

How volatile is the equity risk premium? **Figure 1** illustrates how the excess return of stocks over bonds changes during market cycles. The same is true within equity markets: During some periods, value stocks are priced to deliver a substantial premium while other stretches show value offering little or no premium. A similar effect occurs in size and geographic orientation. *One of the key benefits of target-date funds—their simple, formulaic approach to asset allocation—has turned out to be the source of their biggest problems.* If market conditions are not factored into the decision on asset allocation, investors could own too much of an asset class at peak valuations—a likely precursor to future underperformance. We saw evidence of this in 2007–2008 when some funds held very high equity exposures despite very high valuations and low dividend yields, shrinking the nest eggs of those close to retirement age when stock markets plummeted. These same strategies missed a spectacular rebalancing opportunity in early 2009.[3]

The Power of Simple Contra-Trading

We strongly advocate adding tactical asset allocation to target-date glide paths (see our discussion below). However, we realize this approach may not be for everyone. One way to cost effectively receive some of the same benefits is to use a global Fundamental Index approach as the sole equity portfolio.

The beauty of the RAFI® methodology is its ability to implicitly adjust its exposures—by geographic region, style, and size—through anchoring on company fundamentals and automatically rebalancing back to these measures. This embedded contra-trading inevitably sells recent winners and buys recent losers. This process naturally provides a mechanism to reduce exposure to higher priced assets.

We can graphically see how this process works on a country and regional basis in **Figure 2**. Japan at the top of its bubble in 1989 reached 51% of total world stock market capitalization. Ten years of brutal underperformance later, it was 8% of world stock market capitalization. On the other hand, fundamentally weighting Japanese companies by their share of world sales, cash flow, book values, and dividends, we find that the Japan allocation in a global equity portfolio ranged much more tightly, from 12–22%. Target-date funds would have assumed that Japanese equities were going to deliver the same return when they were both 51% and 8% of world market capitalization!

This approach also works on a style basis. When value is really cheap—following a strong run in growth stocks—RAFI strategies tend to have a deep value exposure. And when value is expensive, RAFI strategies tend to have less exposure to value stocks.[4] In fact, RAFI strategies have achieved most of their added value through this dynamic contra-trading process.[5]

Of particular interest in a target-date fund setting is the ability of the RAFI methodology to

Figure 1. Five-Year Realized Equity Risk Premium (S&P 500 – Ibbotson Intermediate Government Bond Index)

Source: Research Affiliates based on data from Standard & Poor's and Ibbotson.

implicitly adjust its overall equity beta—the key driver of risk for these funds. **Figure 3** shows how the rolling 12-month beta changes dramatically for RAFI US Large portfolios over nearly half a century, based on simulations.[6] During the 47-year period, the beta for the index reached a peak of 1.43 and a nadir of 0.59 at the peak of the tech bubble in early 2000. This figure implied that the RAFI strategy would rise three-fifths as much of the equity market or, conversely, fall three-fifths of the overall market's decline. What happened in the subsequent three years? The S&P 500 Index declined by 41% cumulatively and the RAFI strategy shed only 12%.

RAFI Glide Path's Upward Trajectory

So how well would a target-date fund using the FTSE RAFI® All World 3000 Index perform? To estimate the weight between stocks and bonds, we used the old guideline of holding the same percentage of bonds as one's age. Our hypothetical investor is John Saver, a frugal 30-year old who plans to retire in 2020 at age 66. He starts salting away retirement money in January 1984 with a $10,000 portfolio that is invested 70% in stocks and 30% in bonds. Every January 1 he contributes another $1,000 while his stock weighting drops 1%. Thus, at the start of 1985, when John Saver turned 31, his bond weight increased to 31% and stocks were rebalanced to 69%. In comparison, the Dow Jones Target 2020 Index's equity allocations hover around 90% from 1984 until 1990, when it slowly starts slipping, hitting the 44% mark in 2010. This sloping allocation gave the Dow Jones Index an advantage during the bull market that started in 1982.

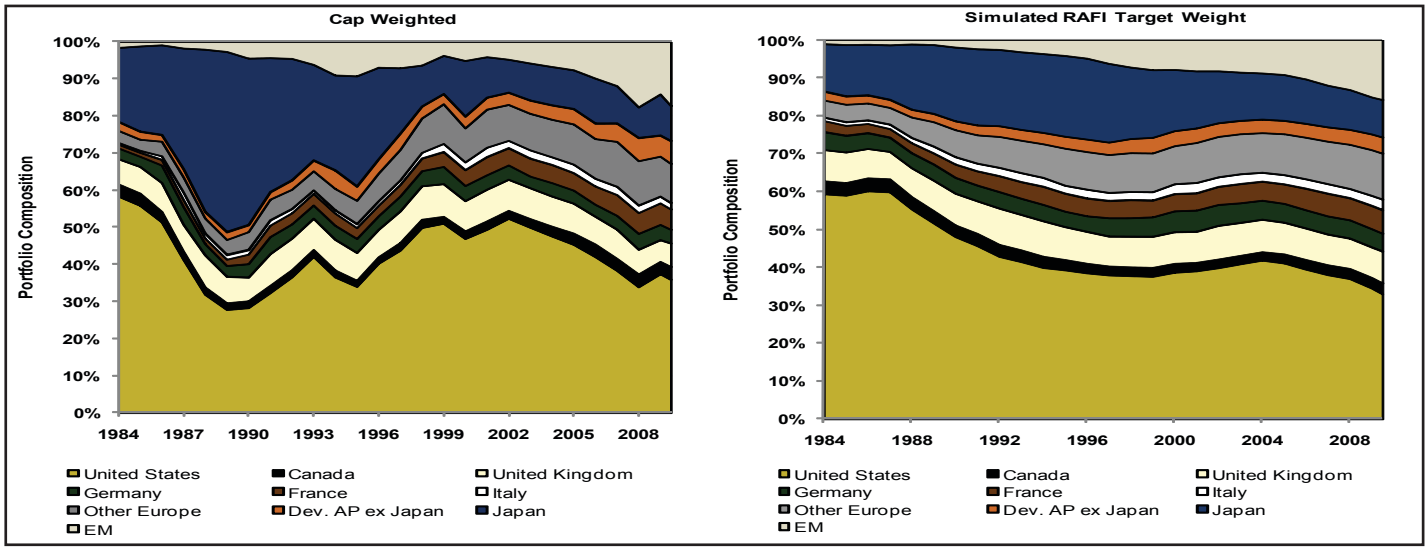
The upshot: Currently, John Saver would have $308,000 in his 401(k) account if he had invested in a portfolio mimicking the Dow Jones Target 2020 Index. If he had invested in funds mimicking the FTSE RAFI All World 3000 Index and the Barclays Capital Aggregate Bond Index, his portfolio would be more than $50,000 bigger—an increase of nearly 20%—and with one-third less risk because he would have been invested in a less equity-centric portfolio.

These superior results could have been achieved with remarkable efficiency. The expense ratio for an age re-weighted blend of two broad index funds—the BarCap Aggregate and the FTSE RAFI All World 3000—would be 40 basis points—well below the average target-date fund expense ratio of 1.03%.[7] There would be no active managers to hire and fire in each sleeve. Communication to plan participants—most clamoring for a simple explanation of how their nest egg is being invested—would be a breeze. Plan sponsors and their employees would not need to be rocket scientists to find a simple and effective path to retirement security.

An Asset Allocation Alternative

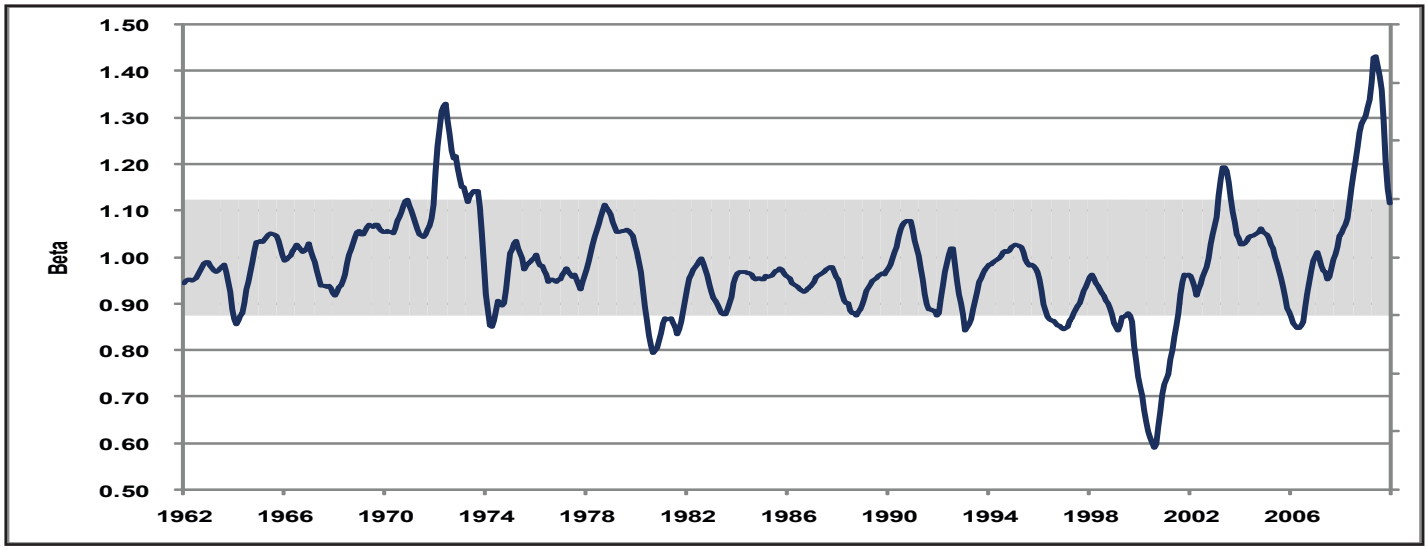
A systematic, disciplined, tactical asset allocation process embedded within today's glide paths would represent a further step forward. With such an overlay, the glide path can be modified as market conditions (notably risky asset class valuations) change, ideally shifting the portfolio to a more conservative or aggressive bent. A simple exercise of comparing *likely and probable* long-term asset class returns and then allocating accordingly could have saved considerable pain in previous

Figure 2. Country/Region Weights for Global Cap-Weighted Index vs. Global Fundamental Index Approach, January 1984–June 2010



Source: Research Affiliates, LLC. Based on data from CRSP, Compustat, Datastream, and Worldscope. THE INDEX DATA PUBLISHED HEREIN IS SIMULATED, UNMANAGED AND CANNOT BE INVESTED IN DIRECTLY. PAST SIMULATED PERFORMANCE IS NO GUARANTEE OF FUTURE PERFORMANCE AND IS NOT INDICATIVE OF ANY SPECIFIC INVESTMENT. ACTUAL INVESTMENT RESULTS MAY DIFFER.

Figure 3. RAFI US Large Rolling 12-Month Beta, 1962–2010



Source: Research Affiliates based on data from Bloomberg..

market storms. One doesn't have to be clairvoyant—*just sensible*.

Let's assume that when stocks beat bonds by a wide margin, things are likely to mean-revert (go back the other way). So John Saver looks back at the return for stocks and the return for bonds over the past five years. Every 1% difference in the annual returns triggers a 1% shift in his year-end rebalance.

When John got started, stocks beat bonds by 5% per year for the previous five years. So, instead of investing 70% in stocks and 30% in bonds, John started with 65% in stocks and 35% in bonds, taking a contrarian bet that markets could go the other way. A year later, stocks were still ahead of bonds, but the five-year equity average outperformance was now only 2% a year. So, instead of rebalancing to 69/31, he now rebalanced to 67/33.

This simple application—contra-trading against whatever has been best in the past five years—leads to 10% more wealth after a quarter-century. This additional $85,000 in returns means that he's now 28% ahead of where he'd have been with the first generation glide path strategy, offering a far better prospect for a secure retirement.

Conclusion

The autopilot embedded in today's target-date funds' glide paths is far too rudimentary in a world of dynamically shifting risk premiums. Would a wise pilot announce, "Based on average weather conditions and airspeed, the flight from LAX to JFK takes four hours and forty five minutes. Rather than check the weather or air traffic, I will simply assume average conditions. See you in five hours." Of course not! Conditions are rarely average—in flight or in the capital markets.

Asset allocation is a critical step in the asset management process, whose essence Benjamin Graham once described as "…the management of risks, not the management of returns." No matter how diversified the portfolio, risk and reward aren't linear. *But target-date funds tacitly assume they are!* Just because you are willing to take more risk doesn't preordain higher returns, *even over decades-long stretches*. Rather, managing risk should be done either explicitly with active asset allocation of the glide path or implicitly through the natural contra-trading embedded in the Fundamental Index approach.

Endnotes

1. "Investment Returns: Defined Benefit vs. 401(k) Plans," Alicia H. Munnell, Mauricio Soto, Jerilyn Libby, and John Prinzivalli. Issue Brief, Center for Retirement Research at Boston College, September 2006. http://www.imninc.com/Evergreen1/BC_Investment_Returns.pdf.
2. "Plan Investment Options and Participant Behavior," TIAA-CREF: Research Summary, June 2006. http://www.tiaa-crefinstitute.org/pdf/research/speeches_papers/rs060106.pdf.
3. See "The Great Contra-Trade," *RAFI Fundamentals*, May 2009. http://researchaffiliates.com/ideas/pdf/Fundamentals_rev200905.pdf.
4. See "Dynamic Style and Size Exposures," *RAFI Fundamentals*, August 2007. http://researchaffiliates.com/ideas/pdf/Fundamentals_200708.pdf.
5. Contra-trading led to a major boost to performance in 2009 when RAFI strategies displayed a strong bias toward deep value stocks. For a longer discussion, please see the May 2009 issue of *RAFI Fundamentals*.
6. We use the U.S. large company RAFI strategy due to its longer track record. It should be noted that the proposed RAFI All World strategy would have generated similar results.
7. Due to the long simulation period, we used a cap-weighted bond index for the fixed-income portion of the portfolio, thereby understating the full benefit of this approach.

Performance Update

TOTAL RETURN AS OF 11/30/10	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	ANNUALIZED 5 YEAR	ANNUALIZED 10 YEAR	ANNUALIZED 10 YEAR VOLATILITY
FTSE RAFI® 1000 Index[A]	FR10XTR	11.09%	13.24%	-2.22%	3.18%	5.31%	18.16%
S&P 500[B]	SPTR	7.86%	9.94%	-5.15%	0.98%	0.81%	16.25%
Russell 1000[C]	RU10INTR	8.83%	11.48%	-4.66%	1.30%	1.29%	16.47%
FTSE RAFI® US 1500 Index[D]	FR15USTR	19.54%	30.14%	4.61%	6.24%	12.51%	23.12%
Russell 2000[E]	RU20INTR	17.52%	26.98%	-0.37%	2.79%	6.40%	21.16%
FTSE RAFI® Developed ex US 1000 Index[F]	FRX1XTR	-0.98%	0.11%	-7.68%	4.31%	6.54%	20.00%
MSCI EAFE[G]	GDDUEAFE	0.10%	1.55%	-9.63%	2.27%	3.49%	18.52%
FTSE All World Series Developed ex US[H]	FTS5DXUS	1.51%	3.42%	-8.59%	3.36%	4.33%	18.72%
FTSE RAFI® Developed ex US Mid Small[I]	FRSDXUS	5.97%	7.61%	-3.21%	4.51%	10.40%	18.48%
MSCI EAFE Small[J]	MCUDEAFE	7.13%	7.80%	-8.59%	-0.01%	6.08%	20.07%
FTSE RAFI® Emerging Markets[K]	TFREMU	10.96%	16.32%	0.73%	17.27%	23.74%	25.14%
MSCI Emerging Markets[L]	GDUEEGF	11.24%	15.65%	-2.19%	12.85%	15.71%	24.70%
FTSE RAFI® Canada[M]	FRCANTR	9.96%	13.42%	3.51%	7.63%	9.44%	14.31%
S&P/TSX 60[N]	TX60AR	9.48%	11.88%	0.31%	6.51%	5.79%	15.61%
FTSE RAFI® Australia[O]	FRAUSTR	-4.82%	-0.97%	-5.32%	4.92%	8.98%	13.12%
S&P/ASX 200 Index[P]	ASA51	-2.02%	1.65%	-7.01%	4.20%	7.80%	13.57%
FTSE RAFI® Japan[Q]	FRJPNTR	0.11%	2.07%	-6.43%	-8.00%	-9.53%	18.14%
MSCI Japan[R]	GDDLJN	-3.35%	5.25%	-16.24%	-8.90%	-2.98%	18.31%
FTSE RAFI® UK[S]	FRGBRTR	4.76%	7.54%	-2.31%	7.24%	5.90%	17.30%
MSCI UK[T]	GDDUUK	5.15%	9.67%	-1.17%	3.99%	2.49%	15.12%
RAFI Investment Grade Master[U]		10.12%	8.80%	8.41%	7.20%	7.15%	6.07%
Merrill Lynch US Corporate Master[V]	C0A0	10.57%	9.46%	7.24%	6.36%	6.91%	6.24%
RAFI High Yield Master[W]		12.51%	14.54%	12.74%	10.68%	10.71%	11.26%
Merrill Lynch US High Yield BB-B Rated[X]	H0A4	12.93%	15.58%	8.13%	7.62%	7.88%	10.12%

Definition of Indices: (A) The FTSE RAFI® 1000 comprises the 1000 largest companies selected and weighted using our Fundamental Index methodology; (B) The S&P 500 Index is an unmanaged market index that focuses on the large-cap segment of the U.S. equities market; (C) 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; (D) The FTSE RAFI® 1500 comprises the 1001st to 1500th largest companies selected and weighted using our Fundamental Index methodology; (E) The Russell 2000 is a market-capitalization weighted benchmark index made up of the 2,000 smallest U.S. companies in the Russell 3000; (F) The FTSE RAFI® Developed ex US 1000 Index comprises the largest 1000 non US-listed companies by fundamental value, selected from the constituents of the FTSE Developed ex US Index; (G) MSCI EAFE (Morgan Stanley Capital International Europe, Australasia, Far East) is an unmanaged index of issuers in countries of Europe, Australia, and the Far East represented in U.S. dollars; and (H) The FTSE All World ex-US Index comprises Large and Mid-Cap stocks providing coverage of Developed and Emerging Markets excluding the United States. It is not possible to invest directly in any of the indexes above; (I) The FTSE RAFI® Developed ex US Mid Small Index tracks the performance of small- and mid-cap equities of companies domiciled in developed international markets (excluding the United States), selected based on the following four fundamental measures of firm size: book value, cash flow, sales, and dividends. The equities with the highest fundamental strength are weighted according to their fundamental scores. The Fundamentals Weighted® portfolio is rebalanced and reconstituted annually. Performance represents price return only; (J) The MSCI EAFE Small Cap Index targets 40% of the eligible small-cap universe (companies with market capitalization ranging from US$200 to US$1,500 million) in each industry group of each country in the MSCI EAFI Index; (K) The FTSE RAFI® Emerging Markets Index comprises the largest 350 companies selected and weighted using the Fundamental Index® methodology; (L) The MSCI Emerging Markets Index is an unmanaged, free-float-adjusted cap-weighted index designed to measure equity market performance of emerging markets; (M) The FTSE RAFI® Canada Index comprises the Canadian stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (N) 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; (O) The FTSE RAFI® Australia Index comprises the Australian stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (P) The S&P/ASX 200 Index, representing approximately 78% of the Australian equity market, is a free-float-adjusted, cap-weighted index; (Q) The FTSE RAFI® Japan Index comprises the Japanese stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (R) 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; (S) The FTSE RAFI® UK Index comprises the U.K. stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (T) 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; (U) The RAFI® 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; (V) 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; (W) The RAFI®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; (X) The Merrill Lynch U.S. High Yield Master II 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.

Source: All index returns are calculated using Total Return data from Bloomberg except for the FTSE RAFI Developed ex US Mid Small (FRSDXUS) and the MSCI EAFE Small (MCUDEAFE) which uses price return data.