

Fundamental Indexes: A New Dimension in Equity Investing

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EXECUTIVE SUMMARY

Capitalization-weighted index funds have traditionally played a significant role within the asset allocation strategies of institutional clients. Anchored in modern portfolio theory and the Capital Asset Pricing Model (CAPM), passive equity indexing has grown into a business with trillions of dollars under management. Today, it provides investors with diversified, low cost exposure to a multitude of styles and market segments. Nevertheless, debate over the efficiency and suitability of cap-weighted index funds has fueled investor interest in alternative weighting schemes. More recently, fundamental indexing is challenging the conventional wisdom of cap-weighted indexing.

Fundamental indexes weigh constituents based on valuation metrics such as dividends, cash flows, earnings, and sales, which measure economic footprint rather than market capitalization. This approach enables fundamental indexes to build diversified portfolios that reflect the underlying fundamentals rather than just security prices. Although fundamental indexing has its fair share of skeptics, it has gained noteworthy traction within the investment industry over the past few years. The methodology offers investors an opportunity to align their investment choices to their fundamental beliefs about market valuation. We believe that fundamental indexing is an innovative tool that allows investors to seek returns while preserving the diversification and liquidity benefits of a low cost framework, similar to traditional cap-weighted indexing.

THE CAPITAL ASSET PRICING MODEL AND CAP-WEIGHTED INDEXES— HOW EFFICIENT IS THE MARKET?

The CAPM forms the intellectual basis for various investment practices. The model links an asset's expected return to that of the market and the risk-free asset as characterized by its beta. As with all other models, the CAPM is based on a series of fundamental assumptions about investors and capital markets. While some are more generic than others, certain suppositions about market efficiency and behavioral expectations of investors make the CAPM a powerful tool that can effectively reduce the portfolio construction process to a mean-variance optimization. The model implies that an investor allocates wealth between a market portfolio and a risk-free asset based on the investor's risk-return profile. In theory, the market portfolio comprises all types of assets, both liquid and illiquid. However, in practice, a broad market index is often used as a proxy for the market portfolio.

Many of the CAPM's assumptions are not congruent with today's financial markets, and, are therefore being challenged by advocates of fundamental indexes. For example, the CAPM ignores transaction and borrowing costs and yet such factors typically filter into the decision making

process of most investment managers. Regardless of the CAPM's assumptions, 80% of the global mutual funds¹ are benchmarked to cap-weighted indexes. This is a testimony to the wide acceptance of CAPM within the investment industry. The success can be attributed in part to certain advantages such as low cost and turnover, broad market exposure, high liquidity, and an objective and transparent index structure.

After CAPM, alternate models like the Fama-French (1992)² and Carhart's four-factor model (1997)³ became the landmark of industry and academic research seeking to explain market behavior. Unlike CAPM, which uses a single factor, beta, these models employ a multifactor approach. Fama & French believe that stocks with a small market capitalization and a high book-to-market ratio tend to outperform the market as a whole. Carhart further extended the idea arguing that excess portfolio returns can be significantly explained by a momentum factor. This factor-driven approach formed the basis of many quantitative active equity strategies and is today driving the wave of fundamental indexing.

A popular criticism of cap-weighted indexes by fundamental theorists is the performance drag resulting from the systematic overweighting of overvalued companies and conversely, the underweighting of undervalued companies relative to their fair value weight (Hsu 2004)⁴. In other words, if the stock price of Company A rises beyond its fair price and is inconsistent with its valuation metrics, Company A will nonetheless have a greater weight in a cap-weighted index. These misweights can be explained by the fact that, in a less efficient market, mispricings exist and a company's market capitalization doesn't always reflect its fair value. These inefficiencies make cap-weighted indexes more susceptible to pricing bubbles and subsequent corrections, which leads to increased volatility.

FUNDAMENTAL INDEXES

Since the introduction of the concept in 2004, fundamental indexes have garnered momentum from investors searching for new portfolio weighting schemes. Supporters of fundamental indexing maintain that the methodology not only addresses the limitations of cap-weighted indexes but also allows for augmentation and retention of many benefits associated with cap-weighted indexes. Despite being a new concept within the investment world, the popularity of fundamental indexing has grown, with current assets estimated at more than \$35 billion⁵.

At its core, fundamental indexing is based on the philosophy that markets are inefficient to some degree and providers continually strive to achieve optimal ways of capturing deviations from fair value. Fundamental indexes weigh securities based on a plethora of valuation metrics like sales, cash flow, or dividends, etc. Though unique in their choice of weighting factors, most fundamental indexes employ similar index construction methodologies. From what we have seen, fundamental index funds operate largely within the same liquidity space as most cap-weighted index funds. This is largely because valuation metrics such as earnings, book value, and cash flows are highly correlated with market capitalization and hence stock liquidity⁶. Additionally, the rebalancing frequency of an index is chosen in order to achieve a delicate balance between maintaining its core structure in the wake of market movements without contributing to overall turnover.

1. 2009 Investment Company Fact Book, 49th edition, Investment Company Institute

2. Eugene F. Fama and Kenneth R. French, The Cross-Section of Expected Stock Returns, *Journal of Finance*, 1992, Vol. 47.

3. Mark M. Carhart, On Persistence in Mutual Fund Performance, *Journal of Finance*, 1997, Vol. 52.

4. Jason Hsu, Cap-Weighted Portfolios are Sub-optimal Portfolios, Research Affiliates Working Paper, 2004.

5. Mellon Capital calculation as of December 31, 2009. Based on industry research, discussions with index providers.

6. Lubos Pástor and Robert F. Stambaugh, Liquidity Risk and Expected Stock Returns, Discussion paper no. 3494. Centre for Economic Policy Research, 2002.

Granted, fundamental index providers win points in their ability to provide investors an abundance of options based on their market view and beliefs; however, the utilization of self-styled valuation factors and proprietary data (in some cases) for index construction raises concerns about their objectivity and transparency.

COMPARATIVE ANALYSIS

Let us focus our attention on a detailed study and comparison of fundamental indexes, both domestic and international. The fundamental index families included in this study, along with their weighting factors, are as follows:

WisdomTree Investments Inc.	FTSE RAFI Indexes
Cash Dividends	Average 5-year Sales
Core Earnings	Average 5-year Cash Flow
	Current Book Value
	Total Dividends Over Past 5 Years

Figure 1 provides a snapshot of certain major cap-weighted indexes and their corresponding fundamental offerings from WisdomTree and FTSE RAFI. The index constituents are dated as of December 31, 2009. The return computations use actual market data from January 2007 to December 2009 for the U.S. broad market, and January 2008 to December 2009 for the global indexes (live market data prior to January 2007 is limited). We have chosen the Dow Jones U.S. Total Stock Market Index (“Dow Jones U.S. TSM”) and the MSCI All Country World Index (“MSCI ACWI”) as the cap-weighted benchmarks for the U.S. domestic broad market and global indexes respectively. We analyze the following fundamental indexes in depth:

Index Name	Abbreviation
WisdomTree Earnings Index	WT Earnings
WisdomTree Dividend Index	WT Dividend
FTSE RAFI US 3000 Index	FTSE RAFI US 3000
WisdomTree Global Equity Income Index	WT Global Income
FTSE RAFI All-World 3000 Index	FTSE RAFI World 3000

The alternative sets of weighting factors produce portfolios with different characteristics (Figure 1). For the U.S. broad market indexes, the WisdomTree dividend & earnings indexes exhibit price-to-book and price-to-cash flow ratios analogous to those of the cap-weighted indexes, and do not imply an explicit tilt towards either value or growth. The FTSE RAFI indexes, however, have overall lower price multiples implying more of a value orientation. We further analyze these style tilts in subsequent sections.

The performance of the fundamental indexes was better than cap-weighted indexes in the domestic portfolios for this period. The annual returns for the fundamentally weighted indexes exceed those from cap-weighted indexes by 1.72% to 2.49% on an annualized basis. The outperformance is noteworthy given the relative efficiency of developed markets and potentially provides an opportunity to capture alpha at comparable risk levels. Furthermore, both the WisdomTree and FTSE RAFI indexes show a better risk-adjusted performance on the domestic side relative to the Dow Jones U.S. TSM. We observe mixed performance on the global level. The WT Global

Income index underperformed MSCI ACWI by 0.65% in this time period. However, the FTSE RAFI outperformed by 6.45%. We believe these performance results validate the premise that fundamental indexes may offer investors an opportunity to capture increased returns over traditional cap-weighted indexes. We next explore whether these excess returns are compensation for hidden risks or implicit investment bets.

Figure 1: Comparison of Cap-Weighted Indexes and Fundamental Indexes—Price Multiples and Returns

Index holdings as of December 31, 2009

Data Source: Factset, Bloomberg, Index data obtained from MSCI, WisdomTree Investments Inc., Dow Jones Indexes, FTSE

	Global Indices			US Broad Market Indices			
	MSCI ACWI	WT Global Income	FTSE RAFI World 3000 ⁷	Dow Jones US TSM	WT Earnings	WT Dividend	FTSE RAFI US 3000
# Securities	2,423	492	2,967	4,202	1,757	1,179	2,890
Weighted Median Market Cap ⁸ (\$B)	32.30	38.38	20.88	30.53	33.65	40.16	17.45
Dividend Yield ⁸	1.98	4.15	1.73	1.81	2.02	3.40	1.59
Average P/E ¹ (Trailing 12)	16.60	15.60	15.60	16.60	14.90	15.70	15.00
Average P/CF ⁸	6.80	5.00	4.00	6.90	7.30	7.50	4.00
Average P/B ⁸	2.10	1.60	1.50	2.00	2.20	2.10	1.40
Annualized Return(%) ⁹	-8.53	-9.19	-2.08	-5.00	-2.51	-2.97	-3.28
Annualized Standard Deviation (%) ⁹	26.87	27.17	32.96	21.30	20.56	20.48	25.41
Annualized Tracking Error(%) ⁹	0.00	5.57	8.20	0.00	4.69	5.94	7.85
Sharpe Ratio ¹⁰	-0.35	-0.38	-0.09	-0.28	-0.17	-0.19	-0.17

The liquidity profile of an index is important and has a direct relationship to a portfolio's expected market impact and subsequent transaction costs during periods of rebalance. *Figure 2* shows different slices of liquidity for the various indexes, each with a base value of \$500 Million. The liquidity bucket is defined as the percentage of average daily volume that each security within the index can be traded for. The cap-weighted indexes (domestic and global) along with the WT Domestic Earnings Index display a high level of liquidity given that almost 98% of the index can be traded within 3% of the average daily volume of the constituents. The FTSE RAFI indexes and the WT Global Income Index appear less liquid and may be subject to relatively higher trading costs during portfolio implementation. However, from an investor's perspective, a bid-ask spread difference of about 2-3 basis points is insignificant. We see adequate liquidity in these indexes and believe that the possible differences are easily compensated by their risk-adjusted returns.

Figure 2: Comparison of Cap-Weighted Indexes and Fundamental Indexes—Liquidity

Holdings as of December 31, 2009

Data Source: MS Analytics, Index data obtained from MSCI, WisdomTree Investments Inc., Dow Jones Indexes, FTSE

Liquidity Bucket ¹¹	Global Indices			US Broad Market Indices			
	MSCI ACWI	WT Global Income	FTSE RAFI World 3000	Dow Jones US TSM	WT Earnings	WT Dividend	FTSE RAFI US 3000
< 1%	94.10%	10.23%	79.53%	91.28%	59.57%	38.29%	71.60%
1% - 3%	4.81%	61.19%	14.92%	7.29%	38.94%	53.30%	18.84%
3% - 6%	0.69%	17.88%	2.61%	1.34%	1.05%	7.73%	4.77%
6% - 10%	0.22%	4.14%	1.39%	0.05%	0.19%	0.32%	2.27%
10% - 25%	0.14%	5.25%	1.14%	0.03%	0.23%	0.26%	2.23%
> 25%	0.04%	1.31%	0.41%	0.00%	0.02%	0.10%	0.29%
Weighted Bid-Ask Spread ¹¹ (bps)	7.50	8.00	10.53	5.41	4.26	8.91	7.55
# Days to Trade \$500 MM ¹¹	0.02	0.19	0.06	0.03	0.05	0.07	0.08
% Weighted Top 5 Holdings ¹¹	4.48%	11.67%	7.33%	8.94%	12.75%	14.42%	14.19%

In addition to liquidity, clients seek diversified, broad market exposure through index portfolios. Thus, another key aspect of any index strategy is its exposure to different economic and cap-weighted sectors. In *Figure 3*, we outline the percent holdings within various cap-weighted sectors.

7. Returns starting March 2008
 8. Sourced from Factset
 9. Sourced from Bloomberg
 10. Risk Free rate is 1%
 11. Sourced from MS Analytics

Here we see an interesting difference. The FTSE RAFI indexes have a higher concentration in the small-mid cap space as compared to their peers across domestic and international markets. This may prompt investors to question the prudence of a higher allocation within small cap market segments. Empirically, the liquidity of small cap names has been adversely impacted during a credit crisis and periods of severe market drawdown, similar to the ones recently observed. In contrast to their FTSE RAFI counterparts, the WisdomTree indexes historically have avoided this potential risk and display a higher concentration within the relatively stable and liquid large cap segment.

Figure 3: Market Capitalization Profile

Holdings as of December 31, 2009

Data Source: MS Analytics, Index data obtained from MSCI, WisdomTree Investments Inc., Dow Jones Indexes, FTSE

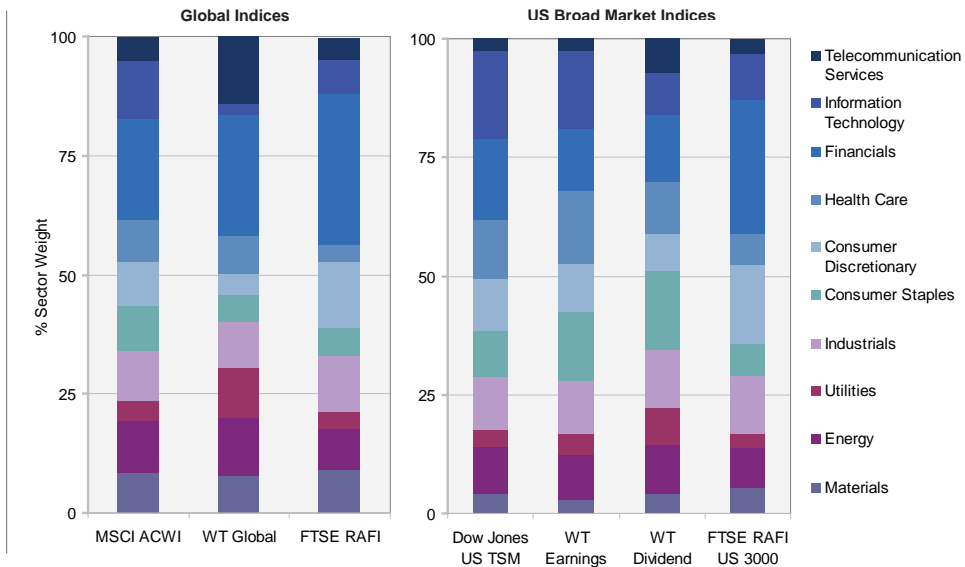
	Global Indices			US Broad Market Indices			
	MSCI ACWI	WT Global Income	FTSE RAFI World 3000	Dow Jones US TSM	WT Earnings	WT Dividend	FTSE RAFI US 3000
< 500 MM	0.59%	0.00%	1.78%	2.12%	1.40%	1.08%	4.67%
500 - 2500 MM	1.59%	0.57%	9.21%	8.31%	7.61%	6.12%	13.06%
2500 MM - 5000 MM	6.67%	6.69%	10.44%	8.47%	7.81%	6.56%	10.02%
5000 MM - 10000 MM	12.92%	12.28%	13.83%	10.12%	8.61%	7.69%	12.01%
> 10 B	78.23%	80.46%	64.75%	70.98%	74.57%	78.55%	60.23%

What about economic sectors? Using the Global Industry Classification Standard (GICS) to compute sector exposures, we find that fundamental indexes are generally well diversified, like their cap-weighted counterparts (See *Figure 4*). The economic diversification is readily seen at both the domestic and international level. Certain sectors though, like financials, technology, consumer discretionary, and healthcare seem to have a dissimilar weighting pattern.

Figure 4: Comparison of Cap-Weighted Indexes and Fundamental Indexes—GICS Sector Weights

December 31, 2009

Data Source: MS Analytics, Index data obtained from MSCI, WisdomTree Investments Inc., Dow Jones Indexes, FTSE



The more significant weighting differences were in the financial and technology sectors. The high weight in financials (and to a lesser extent, consumer discretionary) for the FTSE RAFI indexes can be attributed to their distressed valuations during the recent market turmoil of 2008-09. The subsequent attractiveness of these sectors can be viewed as an opportunity to reap the benefits of deep value investing. Also, the growth oriented nature of technology firms and their propensity towards share buybacks is reflected in their small weight within the WisdomTree Dividend Index. Also of note is a more modest weighting of the healthcare sector within FTSE RAFI indexes. This position reflects the sector’s small economic footprint in spite of high growth potential.

We next consider geographic concentrations of the global indexes. From a macro perspective, MSCI ACWI and FTSE RAFI All-World 3000 have comparable allocations globally. One notable difference is the overweight to the European region in the WT Global Income Index. This is in line with the dividend paying patterns prevalent across this region. However, the recent debt crisis in Greece and continued devaluation of the euro prompts us to question the overweight to Europe and its potential adverse impact on portfolio returns.

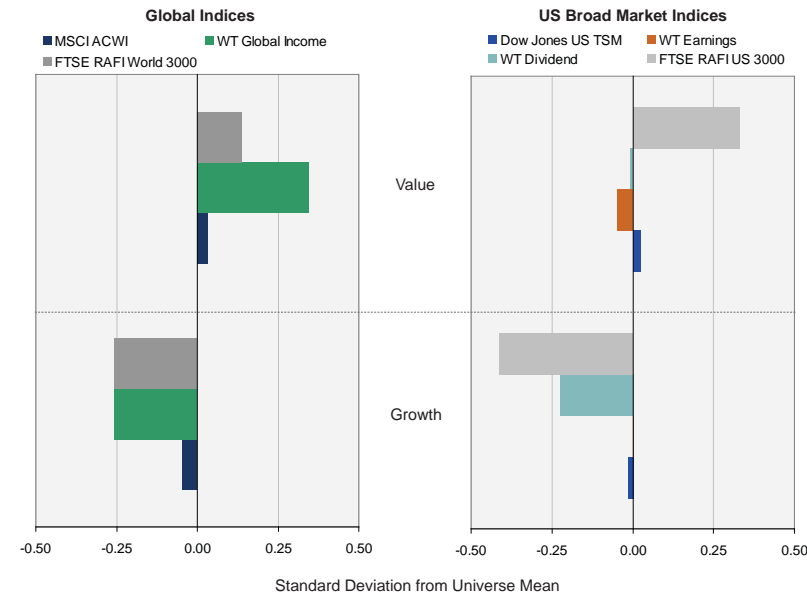
Figure 5: Comparison of Cap-Weighted Indexes and Fundamental Indexes—Regional Weights
December 31, 2009

	Global Indices		
	MSCI ACWI	WT Global Income	FTSE RAFI World 3000
Americas	44.47%	28.61%	43.47%
Europe	31.15%	53.57%	33.04%
Pacific Rim	22.72%	14.98%	22.17%
Mideast/Africa	1.66%	2.84%	1.32%

Data Source: MSCI Barra GEM2L Model, Index data obtained from MSCI, WisdomTree Investments Inc., Dow Jones Indexes, FTSE

Delving further into our analysis, we performed a risk attribution using the MSCI Barra Aegis equity models. *Figure 6* outlines the index-level exposures for some of the risk factors, as defined in terms of the standard deviation from the mean of the underlying MSCI Barra universe of stocks. As discussed in prior sections, the FTSE RAFI indexes display a negative tilt for growth and a positive one for value, confirming once again a value bias. However, the earnings and dividend yield exposure for WT indexes remains coherent with their choice of weighing factors and provides investor’s with identifiable portfolio characteristics.

Figure 6: Comparison of Cap-Weighted Indexes and Fundamental Indexes—Barra Risk Factor Exposure
December 31, 2009



Data Source: MSCI Barra GEM2L Model, USE3L Model, Index data obtained from MSCI, WisdomTree Investments Inc., Dow Jones Indexes, FTSE

Some would argue that different weights and a potential value bias mean that fundamental indexes are not strictly passive. Where does fundamental indexing fit relative to an average active equity manager? To help answer this question, we regressed the median excess returns of all active managers with a broad market mandate over the last 10 years with the return difference of the Russell 3000 Value/Growth indexes¹². The model was setup as a 12-month rolling regression and

12. Based on eVestment Alliance Inc. Returns were sourced for all active managers with core equity mandate. Russell 3000 in the US and MSCI ACWI on the International side.

yielded an R-squared of 34%. A similar analysis on the international side using the MSCI ACWI led to comparable though statistically insignificant results, given the relatively short history of data. The high R-squared on the domestic side implies that the variations in returns over the benchmark for actively managed funds may be due to a value bias.

Also, our findings are largely consistent with theories suggested by Fama & French (1992)¹³ concerning a value bias in market returns. These are further substantiated by a study conducted by Dimensional Fund Advisors (DFA) analyzing stock returns across market and style segments¹⁴.

CONCLUSION

Constantly-evolving market environments and investor appetite often necessitate the growth of new products. Even though the contribution of cap-weighted indexes to the investment industry is far reaching, today, fundamental indexes are considered the next generation beta products. In this study, we have closely examined various fundamental index families. Although inception relatively recently, early results indicate that fundamental indexes offer investors a realistic alternative to cap-weighted indexes. Fundamental and cap-weighted indexes share similar traits such as liquidity, sector diversification, and market cap exposure. The differences result from the underlying assumptions and the choice of the weighting factors.

The debate over the placement of fundamental indexing relative to active equity strategies is an open one. Though not traditionally passive, fundamental indexes are significantly different relative to actively managed funds. Given that some active managers continue to outperform their benchmarks and add value for their investors, there are others that seek alpha primarily through value orientation or passive style tilts to their funds. Fundamental indexing could put pressure on these underperforming managers as it becomes more established and implementation costs fall. This should encourage investors to evaluate their investment goals, asset allocation mix and fund managers, with an emphasis on moving away from underperforming active funds. We believe that the development of fundamental and model-driven indexing will further expand the spectrum of equity investments and help investors better manage their expenses and risk profile.

Finally, investors should consider fundamental indexes complementary to an existing allocation in traditional cap-weighted index strategies. By investing across cap-weighted and fundamentally weighted indexes, we believe clients may be able to achieve a unique balance towards their desired risk/reward profile while maintaining a low fee structure. We encourage our clients to proactively consider fundamental indexes as another option within their investment toolkit. At Mellon Capital, we believe that irrespective of the underlying index and strategy, its implementation is best served by a disciplined investment process and strong risk controls.

13. Eugene F. Fama and Kenneth R. French, The Cross-Section of Expected Stock Returns, *Journal of Finance*, 1992, Vol. 47.

14. Truman A. Clark, *The Dimensions of Stock Returns: 2007*, Dimensional Fund Advisors, 2007

DISCLOSURE STATEMENTS

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The WisdomTree Dividend Index is a fundamentally-weighted index that defines the dividend-paying portion of the U.S. stock market. The Index measures the performance of US companies, listed on the NYSE, AMEX or NASDAQ Global Market, that pay regular cash dividends and that meet other liquidity and capitalization requirements established by WisdomTree. The index is dividend weighted at the annual reconstitution in December to reflect the proportionate share of the aggregate cash dividends each component company is projected to pay in the coming year, based on the most recently declared dividend per share. The index was established with a base value of 300 as May 31, 2006.

The WisdomTree Earnings Index is a fundamentally weighted index that measures the performance of earnings-generating companies within the broad U.S. Stock Market. Companies in the index are incorporated and listed in the U.S and have generated positive cumulative earnings over their most recent four fiscal quarters prior to the index measurement date. The index is earnings-weighted in December to reflect the proportionate share of the aggregate earnings each component company has generated. Companies with greater earnings generally have larger weights in the index. WisdomTree Investments uses "Core Earnings", computed by Standard & Poors, as the weighting metric. Core Earnings is a standardized calculation of earnings developed by Standard & Poors designed to include expenses, incomes and activities that reflect the actual profitability of an enterprises ongoing operations.

The WisdomTree Global Equity Income Index* is a fundamentally weighted index that measures the performance of high dividend-yielding companies selected from the WisdomTree Global Dividend Index, which measures the performance of dividend-paying companies in the U.S., developed and emerging markets. At the index measurement date, companies with market capitalizations of at least \$2 billion are ranked by dividend yield and those companies in the top 30% by dividend yield are selected for inclusion in the Global Equity Income Index. Companies are weighted in the index based on annual cash dividends paid. The Index, established with a base value of 200 on November 30, 2007, is calculated in U.S. dollars and is updated daily to reflect market prices and exchange rates. Closing or last-sale prices are used when non-U.S. markets are closed.

*Also known as the WisdomTree Global High-Yielding Equity Index.

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The FTSE RAFI All-World 3000 Index will consist of 3000 companies with the largest RAFI fundamental values, selected from the constituents of the FTSE Global Equity Index Series Index.

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