

The Fundamental Index[®] Concept in Emerging Markets

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With over \$5 trillion invested in passive index funds globally, index investing has become a widespread tool for both retail and institutional investors. Index funds are cheap, tax efficient, provide broad diversification, have immense investment capacity, are easy to understand, and consistently outperform most actively managed strategies. However, in less efficient environments, particularly in emerging markets, index funds have yet to garner the same success as their siblings in developed markets. This is partly because investors are reluctant to rely on passive index funds to gain equity exposure in asset classes where active managers may have greater potential to add value.

Almost all traditional indexes are capitalization-weighted; this presents a serious problem in less efficient asset spaces. Capitalization weighting, by construction, puts additional portfolio assets into stocks that are overvalued and reduces the allocation to stocks that are undervalued. This results in a performance drag on capitalization weighted portfolio returns. Where this over- and undervaluation is most severe – less efficient markets – this performance drag is most pronounced.

In this article, we explore how the Fundamental Index[®] methodology uses measures of company scale and success – sales, cash flows, book value and dividends – to overcome some of the structural problem associated with traditional indexes, with extraordinary success in emerging markets.

Index Investing

Passive index investing has rapidly gained popularity and importance amongst institutional and retail investors. While the benefits of investing in a passive index-based portfolio have been widely recognized by academics since the early 1960s, index funds did not represent a serious investment alternative to traditional active management until the late 1970s,¹ nor did they see widespread use until the 1990s. Currently, 13% of global equity investment and over 20% of total institutional assets are held in index funds. The growth curve on exchange-traded funds has been even steeper than that for index mutual funds; exchange

¹ The Capital Asset Pricing Model (CAPM) developed independently by Jack Treynor (1962), William Sharpe (1963), John Linter (1965) and Jan Mossin (1966), which extends the Portfolio Selection Theory of Harry Markowitz (1952), concludes that holding a market index portfolio is optimal. However, it wasn't until the 70s, when quantitative finance begins to gain credibility in the asset management industry that indexing began to gain traction as an investment strategy. The tireless effort of Jack Bogle at Vanguard, Dean LeBaron at BatteryMarch and John McQuown of Wells Fargo Trust (later acquired by Barclays PLC to become BGI) set the stage for the explosive growth in index products and strategies since the early 90s.

traded funds, almost all of which are indexed, held a record \$782 billion in the United States alone at the end of 2009, up from \$534 billion at the end of 2008. This 46% year-over-year growth included \$173 billion of new cash flows, and ETFs now make up more than 7% of all mutual fund assets².

Numerous academic studies, including recent studies by Morningstar and Lipper, have found that around 70% of all active managers underperform their benchmark indexes net of fees.³ Our recent figures show that, for the last five years ending June 2009, 71% of active managers in the U.S. equity space and 72% of active managers in the international equity space underperformed their benchmarks⁴. Consequently, it is not surprising that passive index funds have become popular among investors. Of course, statistics like these do not mean that there are no good active managers. To the contrary, there is evidence that high performing managers exist. However, it does suggest that it is difficult for investors to identify strong active managers – in advance of their superior performance – and stick with them through the inevitable rough patches in their performance. Furthermore, several academic studies have found that those active managers with the most promising past performance are no more likely to outperform going forward than the average manager⁵.

Most of the indexes upon which passive funds are based are weighted by market capitalization. Markets themselves are capitalization weighted in that the aggregate return of the market must be measured by a capitalization weighted portfolio. For measuring aggregate performance, a capitalization weighted portfolio is tremendously convenient.

However, as a passive investment vehicle, capitalization weighted portfolios suffer from a serious return drag. If markets are not perfectly efficient, then some stocks will be overvalued and some undervalued. These pricing errors will likely be corrected over time; that is, the overvalued stocks will decrease in value (becoming future losers) and the undervalued stocks will increase in value (becoming future winners). In this type of environment, the capitalization weighted construction actually leads to sub-optimal performance.⁶ The reason is simple: portfolios weighted by market capitalization will weight by price rather than by fair value. A stock trading above fair value will, all else equal, receive a higher weight than a stock trading below fair value. Thus a capitalization weighted portfolio will systematically overweight overvalued stocks, and underweight undervalued stocks. This process, coupled with mean reversion in pricing errors, creates a drag on returns.

Furthermore, the less efficient the market, the greater the resulting return drag. Hsu (2006) shows that the return drag of standard capitalization weighted portfolios compared to non-capitalization weighted portfolios is proportional to two times the variance of the average pricing noise in the market, or:

² Based on data from National Stock Exchange.

³ See also Carhart (1997), Ippolito (1989), and Wermers (2000).

⁴ Source: eVestment Alliance

⁵ Carhart (1997), Fama and French (2009), Fama and French (2010).

⁶ Hsu (2006) and Treynor (2005) demonstrate that capitalization weighted portfolio strategies are sub-optimal relative to a variety of other weighting schemes, including random weighting, if markets are less than perfectly efficient.

$$Return\ Drag = 2 \cdot \sigma^2$$

where pricing noise σ^2 here is a measure of the random price fluctuations that are unrelated to changes in the underlying company fundamentals or information flow. For example, individual stock volatility is typically 30%-40%. If markets were perfectly efficient, this volatility would entirely result from the flow of new information. This would immediately cause a re-evaluation of the value of the stock (earnings reports or forecasts, CEO decisions, macroeconomic events, etc.), in perfect accord with the exact value of that information. But in a noisy market environment, say 10% of this volatility results from well-documented phenomenon such as investor herding, over-or under reaction to news, or various behavioral biases. In this case, the drag on a capitalization weighted portfolio would be $2(10\%)^2=2\%$ (see Figure 1).

Figure 1: Performance Drag on Capitalization weighting by Pricing Noise

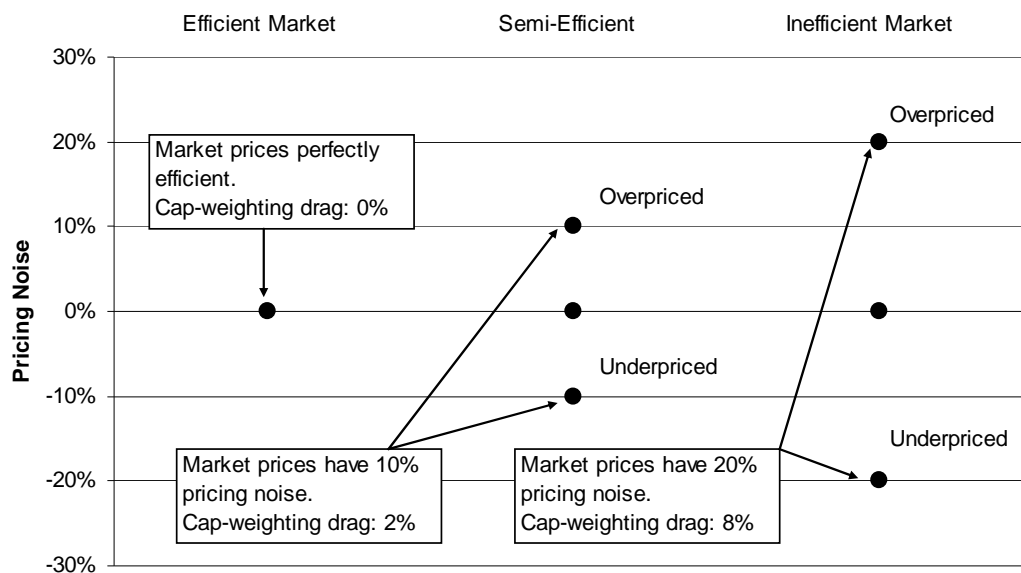


Figure 1 shows that the less efficient the market, the greater the return drag on capitalization weighted returns relative to a non-price weighted portfolio.⁷ This naturally raises questions about the appropriateness of traditional index investing in less efficient asset spaces.

Fundamental Index Portfolios

The Research Affiliates Fundamental Index (RAFI[®]) concept presents a compelling alternative to capitalization weighted passive investing. In a RAFI portfolio, weights are not determined by market capitalization, but instead by firm fundamentals, namely dividends, book value, cash flow, and sales. Importantly, RAFI weights *do not* represent a better guess at the true economic weight or value of a firm. However, since they are not related to price

⁷ With 10% error, and with that error corrected in the next year, capitalization-weighting will invest 45% in an asset that rises 11% and 55% in an asset that falls 9%, earning zero return. Equal weighting will invest half in each, earning 1%.

(and therefore pricing error) Fundamental Index weights *do not systematically overweight overvalued stocks and underweight undervalued stocks*. As a consequence, a RAFI portfolio is fairly valued in aggregate and therefore avoids the return drag of a similar capitalization weighted portfolio.

Of course, in principle, any randomly weighted portfolio could achieve similar results.⁸ However, unlike the non-capitalization-weighted alternatives that have come before (e.g., equal weighting) RAFI methodology retains many of the desirable characteristics of a capitalization weighted index. For instance, it preserves the intuition of the CAPM, which says that larger firms should receive larger portfolio weights. While this has positive theoretical implications, it also has the practical advantage in placing more weights on larger and more liquid stocks and is highly scalable (particularly as compared to an equal weighted approach). A RAFI portfolio offers broad market exposure, is easy to understand, intuitive, and completely transparent. In short, a RAFI portfolio retains all the advantages of a traditional capitalization weighted index, without the return drag.

The RAFI concept has been shown to add 2-3% of value in efficient markets such as the U.S., Europe, and Japan. However, while adoption has been much quicker in these developed market spaces, Fundamental Index portfolios have even greater potential to add value in less efficient markets, where the return drag on their capitalization weighted counterparts is more pronounced.

Index Funds in Emerging Markets

Once considered the domain solely of speculators, emerging market equities have rapidly entered the mainstream of equity investing. Given the faster projected growth of these asset categories, many investors expect emerging market equities to achieve higher returns. However, the advantages of traditional index investing are not as clear in developing financial markets where there are greater price inefficiencies. At its core, capitalization weighted index investing, which requires little or no analysis or information gathering, reflects a belief that markets are efficient and that fundamental analysis and stock picking cannot create value net of fees. In less efficient markets, where prices are more likely to be “wrong”, a traditional capitalization weighted index approach to investing may leave a great deal on the table. Consequently, investors frequently expect actively managed funds to deliver superior performance by exploiting these price inefficiencies and generally prefer active management in these spaces. Unfortunately, it’s the nature of markets that the collective holdings of active managers must closely match the index. So, collectively they can’t win!⁹

⁸ Indeed, building on the previous example of 10% pricing error, any weighting scheme that has weights *uncorrelated* with the pricing error will earn that same 1%, give or take the variance of its own weighting errors. As a thought experiment, consider a weighting scheme that makes the same magnitude error as capitalization weighting, but could as easily overweight the undervalued and vice versa. If its errors are in the same direction as capitalization weight, it gains nothing; if it’s the opposite direction, it now adds 2%. The average gain from abandoning capitalization weighting is still 1%!

⁹ Consider another thought experiment. All Emerging Markets are, by definition, capitalization weighted. The indexes are, by construction, capitalization weighted. What’s left is, by implication, also that self-same capitalization weighted Emerging Markets portfolio; this is the collective holdings of all non-indexed portfolios.

The Fundamental Index Concept in Emerging Markets

In addition to providing higher GDP growth and a fruitful ground for improving upon traditional indexes, emerging markets provide investors in the developed world with a tremendously valuable diversification opportunity. The internal growth of individual emerging market economies combined with growth in trade among the developing world may eventually lead to a decoupling in the economic paths of the developed and emerging world, much as we saw with Japan in the 1960s and 1970s. If and when this decoupling occurs, it will represent a tremendous boost to the value of emerging market equities – not only because the emerging economies will become stronger, but also because savvy investors – alert to the benefits of low correlation – will favor emerging markets, rather than shun them, in economic downturns in the developed world.

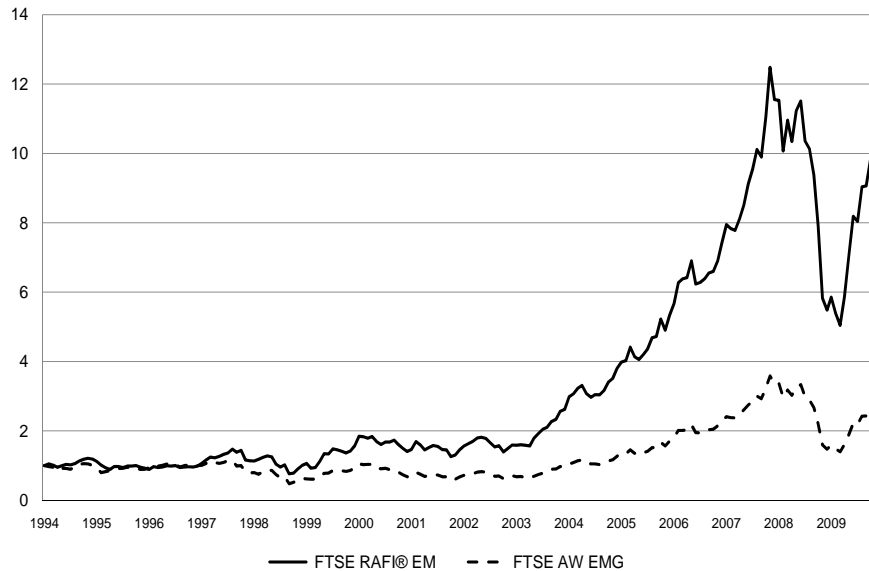
Emerging markets are typically more volatile and less efficient, making the application of the Fundamental Index methodology in these spaces particularly interesting. Despite very high volatility over the last 16 years, the average return to a cap-weighted emerging markets portfolio has been very low. Yet while traditional capitalization weighted portfolios have been undesirable ways to access the emerging markets, a Fundamental Index portfolio does not suffer from the same return drag and should offer better performance.

So how does the Fundamental Index methodology perform in inefficient markets? Figure 2 shows the growth of a dollar from 1994 through December 2009 for the Emerging Markets RAFI index, and results are summarized in Table 1. Not surprisingly, a Fundamental Index approach adds the most value in the noisiest of spaces, emerging markets – approximately 9.0% per year!

Table 1: Fundamental Index Performance in Less Efficient Markets

	Return	Volatility	Value Add	Beta	Correl
FTSE RAFI® Emerging Markets	15.9%	25.9%	9.0%	0.95	0.92
FTSE AW Emerging Markets	6.9%	25.3%			

**Figure 2: Fundamental Index Portfolio Performance in Emerging Markets
(1994 - 2009)**



Source: Research Affiliates, LLC.

So how does the Fundamental Index concept stack up in a broader section of market categories? It is difficult to determine with certainty the level of efficiency of any market. However, most practitioners have a sense that the large company space is probably more efficient than the small company space; the U.S. is highly developed and likely more efficient than much of the remainder of the world, Japan likely has one of the more efficient markets in Asia, and that emerging markets are likely the least efficient of the global equity categories.

This intuition is reflected in Table 2. The Fundamental Index methodology has greater advantage among small U.S. firms than large. This is also true in the international category. They have a greater advantage in the Asia Pacific region excluding Japan than they do in Japan. And they have the greatest advantage of all in the emerging market category where markets are presumably the least efficient. In other words, the Fundamental Index approach is at its best in less efficient markets.

**Table 2: Fundamental Index Advantage by Geographical Region
(Through 2009)**

	Start Date	Annual Return	Volatility	Value Add
FTSE RAFI US Large S&P 500	1962	11.3% 9.3%	15.4% 15.1%	2.0%
FTSE RAFI Europe FTSE Europe	1984	15.2% 12.3%	18.1% 17.7%	2.9%
RAFI Global ex US MSCI EAFE	1984	12.0% 8.9%	17.8% 18.0%	3.1%
FTSE RAFI Global Small ex US MSCI EAFE Small	1994	10.4% 7.2%	16.3% 18.0%	3.2%
FTSE RAFI Japan FTSE Japan	1984	5.3% 2.1%	19.7% 20.1%	3.2%
FTSE RAFI US Small Russell 2000	1984	12.8% 8.6%	19.6% 19.6%	4.3%
FTSE RAFI All World 3000 MSCI All World	1994	11.0% 6.6%	16.2% 15.7%	4.5%
FTSE RAFI AP ex Japan MSCI AP ex Japan	1988	15.0% 10.0%	22.7% 21.8%	5.0%
FTSE RAFI Emerging Markets FTSE Emerging Markets	1994	15.9% 6.9%	25.9% 25.3%	9.1%

Source: Research Affiliates, LLC

A Fundamental Index strategy is not without its disadvantages. In particular, markets are themselves capitalization weighted and so a Fundamental Index portfolio does not represent the investor experience in aggregate (though it may be a better measure of the performance of the “average” firm). Thus they better serve as a basis for investable portfolios than for benchmark indexes.

However, the advantages of Fundamental Index portfolios outweigh the disadvantages for investors. While passive in its management, Fundamental Index methodology is active in its belief system, namely that markets are not perfectly efficient. Fundamental Index strategies succeed when prices are inefficient, which represents a departure from standard indexing philosophy. They typically exhibit some active management characteristics; specifically active industry sector weights, active capitalization tilt and dynamic value tilt (this owes to the fact that industries and other asset categories can be mispriced, not just individual assets – consider the technology bubble of the late 1990s, the biotech bubble in the mid 1980s, and

the reverse bubble in financial stocks in early 2009). More interestingly, this passive strategy sources 10-20% of its value added from stock selection according to standard attribution models such as Brinson or Barra analyses. *And yet, the Fundamental Index concept does not involve any stock selection!*

This performance advantage, combined with the many of the traditional advantages of index investing (low cost, low fees, transparent strategy, full market exposure, etc.) makes Fundamental Index strategies extremely compelling in less efficient markets.

Conclusion

Traditional capitalization weighted index funds may not be an ideal way to invest in inefficient markets. This is because the performance drag on a capitalization weighted portfolio increases with the pricing noise in the market, which is most present in inefficient asset categories. A Fundamental Index strategy may well be the right passive solution for less efficient markets and market segments. It is consistent with the belief system that prices are not perfectly efficient and that active management can be successful. It offers value added over standard capitalization weighted index benchmarks while offering the benefits associated with traditional indexing—providing broad diversification, high liquidity, low maintenance cost and low management fees.

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