

# Fundamental indexation: an active value strategy in disguise<sup>§</sup>

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## Abstract

In this paper we critically examine the novel concept of fundamental indexation. We argue that fundamental indexation is by definition nothing more than an (elegant) value strategy, because the weights of stocks in a fundamental index and a market capitalization-weighted index only differ as a result of differences in valuation ratios. Moreover, fundamental indices more resemble active investment strategies than classic passive indices, because (i) they appear to be at odds with market equilibrium, (ii) they do not represent a buy-and-hold strategy and (iii) they require several subjective choices. Last but not least, because fundamental indices are primarily designed for simplicity and appeal, they are unlikely to be the most efficient way of benefiting from the value premium. Compared to more sophisticated, multi-factor quantitative strategies, fundamental indexation is likely to be an even more inferior proposition.

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## I. Introduction

Arnott, Hsu, and Moore (2005) propose a novel investment approach, which they call fundamental indexation. The main idea behind fundamental indexation, or fundamental indexing, is to create an index in which stocks are weighted by economic fundamentals, such as book value, sales and/or earnings, instead of market capitalization. An important argument put forward by fundamental indexers is that capitalization weighted indices are inferior because they necessarily invests more in overvalued stocks and less in undervalued stocks. However, this is disputed by a.o. Perold (2007), who argues that capitalization weighting does not, by itself, create a performance drag. At present the debate between proponents and critics of fundamental indexing continues to rage on.<sup>1</sup>

In this paper we compare fundamental indices with their traditional cap-weighted counterparts. First we argue that fundamental indices are, essentially, nothing more than a new breed of value indices. Arguably, fundamental indices are more elegant than traditional value indices, but the key underlying idea remains the same. Next we will argue that a fundamental index bears more resemblance to an active investment strategy than to a traditional passive index. Having concluded that a fundamental index is an active value strategy, we next discuss if fundamental indexing is the most efficient way to capture the value premium. We conclude that fundamental indexation is very likely to be inferior compared to more sophisticated quantitative investment strategies.

## II. Fundamental indices capture the value premium

The weights of stocks in a traditional index are proportional to their market capitalizations. Fundamental indices, however, rather weight stocks in proportion to their economic fundamentals. Thus, weights differences are entirely due to differences in valuation levels, i.e. ratios of fundamental value to market value. For example, if a fundamental index is created based on book values, then the weight differences compared to a market capitalization weighted index are entirely due to differences in the book-to-market ratios of the stocks included in the index. In other words, compared to a market capitalization weighted index a fundamental index simply overweights value stocks and underweights growth stocks; a fact which is also recognized by, for example, Asness (2006). This implies that fundamental indices are essentially a new breed of value indices. Of course, value (and growth) indices have been around for many years already, but traditionally these tend to be based on a different, arguably less sophisticated, approach. The traditional approach consists of first classifying each stock as either a value stock or a growth stock, and next creating a value (or growth) index by market capitalization weighting all value (or growth) stocks.<sup>2</sup> Splitting up the universe into two mutually exclusive parts is a rather crude approach compared to fundamental indices, which elegantly re-weight the entire universe of stocks based on fundamental values.

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<sup>1</sup> See for example Arnott & Markowitz (2008), Perold (2008), Treynor (2008) and Hsu (2008), all of which appeared in the March/April 2008 edition of the *Financial Analysts' Journal*.

<sup>2</sup> More recently refinements have been introduced which allow some stocks to be for example 50% value and 50% growth, but the principle has remained the same.

Since the weights differences between a fundamental index and a traditional index are entirely due to differences in valuation levels, any difference in return between a fundamental index and a traditional index must be due to the difference in return between value and growth stocks. Crucially, the proponents of fundamental indexation claim that capitalization weighting by itself introduces a drag on performance, because in a market capitalization weighted index overvalued stocks tend to be overrepresented and undervalued stocks tend to be underrepresented. See for example Arnott et al (2005), Treynor (2005), and Hsu (2006). A fundamentally weighted index is claimed to be superior by avoiding this pitfall. However, Perold (2007) correctly points out that this reasoning hinges critically on the assumption that the mispricing of a stock is, to some extent, predictable by considering the difference between its market price and fundamentals. In other words, the proponents of fundamental indexation assume that stocks with high valuation ratios are more likely to be overvalued than stocks with low valuation ratios. Empirically there is indeed a large amount of evidence for a so-called value premium, as historically value stocks have outperformed growth stocks. This also explains the finding that fundamental indices have outperformed market capitalization weighted indices historically. However, a historical outperformance due to being exposed to an already known return irregularity is something which is quite different from a superior theoretical performance, as a result of avoiding some structural drag on performance that is supposedly associated with capitalization-weighted indices.<sup>3</sup> As Perold (2007) and Kaplan (2008) argue, if we assume that pricing errors are random (in particular, unrelated to valuation ratios), the theoretical case for a systematic outperformance of fundamental indexation breaks down.

We can illustrate the strong value tilt of fundamental indices by regressing the returns of the RAFI 1000 index (the Research Affiliates Fundamental Index for the top 1000 US equities) on the returns of traditional market factor indices. The results of these regressions are displayed in Table 1. We observe that, when we compare the fundamental indexing strategy to the market index, the alpha amounts to 0.19% per month in case we use the Fama-French market factor over the 1962-2005 period, and 0.26% per month in case we use the Russell 1000 index over the 1979-2005 period. Both are highly significant, both from an economical and a statistical point of view. However, these analyses do not take account for the value tilt which characterizes fundamental indexing portfolios. When we add the value and small-capitalization factor of Fama and French (1992), we see that the fundamental indexation strategy has, on average, a large and highly significant (t-statistic over 30) exposure of 0.36 towards the value factor.<sup>4</sup> The loading on the small-capitalization factor is small and negative with -0.07. The results using Russell index data are very similar, with a beta of 0.38 with regard to the Russell 1000 Value/Growth return difference, associated with a highly significant t-statistic of over 30. Thus, these regression results provide strong empirical support for the theoretical observation that fundamental indices are tilted towards value stocks. Particularly interesting is the finding that, after adjusting for this value tilt, the alpha of the RAFI 1000 index drops sharply to an insignificant -0.02% per month in the Fama-French analysis and 0.10% per month, or 1.2% per annum, in case of the Russell data. Thus, we conclude that after adjusting for style exposures, fundamental indexation

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<sup>3</sup> Hemminki and Puttonen (2008) document that fundamental indexation has also generated higher returns in Europe. However, as Asness (2006) points out, this does not come as a surprise, given the fact that Fama and French (1998) already observe that the value effect is an international phenomenon. Estrada (2008) prefers an international value strategy above an international fundamental indexation strategy.

<sup>4</sup> As the cross-sectional dispersion in fundamental characteristics might change over time, the exposure to the value factor might also be time-varying. We report the long-term average exposure here.

offers zero, or at best a small positive added value. We can interpret a possible small positive added value positively, namely as evidence that fundamental indexation might constitute a more effective value strategy than traditional value indices. However, the alpha might also simply reflect some hindsight wisdom or biases in the construction of the historical RAFI 1000 returns, which are after all only based on a back-test. Thus, even the small positive alpha might turn out to be an illusion going forward.

**Table 1: Regression results**

Dependent variable is the historical, simulated RAFI 1000 index minus the risk-free rate of return

Sample period: January 1962 - December 2005

	CAPM		Fama-French 3-factor	
	coefficient	t-statistic	coefficient	t-statistic
Alpha	0.19%	3.5	-0.02%	-0.5
Market - risk free	0.91	74.6	1.02	131.8
Small minus big (SMB)	-	-	-0.07	-7.0
Value minus growth (HML)	-	-	0.36	30.9

Sample period: January 1979 - December 2005

	coefficient	t-statistic	coefficient	t-statistic
Alpha	0.26%	3.8	0.10%	2.9
Russell 1000 - risk free	0.91	59.7	1.01	120.8
Russell 1000 Value - Growth	-	-	0.38	30.6

Sources: Kenneth French website, Datastream

### III. Fundamental indices resemble active strategies

A fundamental index differs from traditional capitalization-weighted indices in several important aspects. First, the market capitalization weighted index is unique in the sense that it is the only portfolio which every investor can hold.<sup>5</sup> Fundamental indices, on the other hand, cannot be held in equilibrium by every investor.<sup>6</sup> For every stock that is overweighted by fundamental investors there must, by definition, be some other investor who actively underweights the same stock, and vice versa. Thus, for fundamental investors to outperform against a capitalization-weighted index, there must be some other group of investors with opposing views who underperform, and vice versa. However, it is not immediately clear which investor characteristics determine that it is optimal to be a fundamental indexer or not. The proponents of fundamental indexation also fail to explain why, in equilibrium, a certain group of investors would want to invest in fundamentally unattractive stocks.

Second, contrary to a market capitalization-weighted index, a fundamental index does not represent a passive, buy-and-hold strategy. Mirroring a cap-weight index requires no turnover, except in case of index changes due to new share issuance. A fundamental index, on the other hand, requires some kind of rebalancing strategy, as changes in stock prices continuously push weights away from their fundamental target levels. In the absence of transaction costs, the ideal fundamental index would be rebalanced continuously. Note, however, that a continuously rebalanced fundamental index will exhibit a negative

<sup>5</sup> For a vivid discussion of this point, see Asness (2006).

<sup>6</sup> Except of course for the trivial case in which the two happen to be exactly the same.

exposure towards momentum compared to a capitalization-weighted index, as it continuously needs to sell stocks that have done well (so for which the weight has increased) and buy stocks that have done poorly (so for which the weight has decreased). This may explain why fundamental index providers propose low rebalancing frequencies, which make their indices deviate more from the theoretical ideal. In addition to saving on transaction costs, this prevents the fundamental indices from getting a large negative exposure to the momentum effect, which historically would have hurt their performance.<sup>7</sup>

Third, several subjective choices need to be made in order to define a fundamental index. Most notably, which particular fundamentals are considered in the construction of the index (e.g. book value, sales, earnings, cash-flow, dividends, etc.) and how exactly should these be defined to construct the index. Also, relating to our previous point, a rebalancing strategy needs to be defined.

In sum, it is not clear who holds the fundamental indexing portfolio in equilibrium, fundamental indexation does not represent a buy-and-hold strategy and fundamental indexation requires subjective choices. These characteristics of fundamental indices actually bear more resemblance with an active investment strategy than with traditional passive indices. Based on these observations we conclude that fundamental indexation is essentially an active value strategy disguised as an index.

#### **IV. Fundamental indexation is a sub-optimal quantitative strategy**

In the previous sections we concluded that fundamental indexing is simply a way to gain exposure to the well-known value premium. Although this is not something unique, it might still be a useful idea in practice. For example, there could remain a case for fundamental indexation if it is a highly efficient way of capturing the value premium. However, fundamental indexation is in fact more likely to be a sub-optimal way of benefiting from the value premium. This is because fundamental indices are primarily designed for simplicity and appeal, and not for optimal risk/return characteristics, as measured by the Sharpe ratio or information ratio for example. Arnott et al (2005) report a Sharpe ratio improvement from 0.301 to 0.444, and an associated information ratio of 0.47 for fundamental indexation.<sup>8</sup> Although these figures are not bad, they are also not spectacular. Furthermore, the outperformance is not very consistent over time, as it tends to be concentrated in certain periods (such as the post 2000 period), while even being negative during others (such as the nineties). Quantitative value strategies which are specifically designed for optimal risk/return characteristics should therefore be able to beat fundamental indexation strategies, not just historically but also in the future.

Furthermore, it is important to realize that fundamental indexation is solely trying to benefit from the value premium, which happens to be just one particular well-known empirical return irregularity. Multi-factor quantitative investment strategies allow investors to benefit from many more anomalies which have been documented empirically, such as for example the medium-term price momentum effect (Jegadeesh and Titman 1993), the short-term reversal effect (Jegadeesh 1990), the earnings momentum effect (Chan,

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<sup>7</sup> The RAFI 1000 still has a slightly negative exposure to the momentum strategy from Fama's website.

<sup>8</sup> This information ratio was derived by taking the reported outperformance of 2.15% and dividing this by the associated tracking error of 4.57%.

Jegadeesh , and Lakonishok 1996) , the accruals effect (Sloan 1996) and the low volatility effect (Blitz and Van Vliet 2007). Not surprisingly, multi-factor quantitative investment strategies are able to generate significantly better results (typically information ratios well above 1) over the same period as studied by Arnott et al (2005). These anomalies together could in similar spirit to a fundamental index be captured in a “behavioral finance index” that could be tracked by passive managers or serve as a benchmark for (quantitative) active portfolio managers.

We conclude that although fundamental indices may appear to be an appealing alternative to traditional market capitalization weighted indices, their risk-return characteristics are dominated by more sophisticated quantitative strategies which allow for more flexibility with regard to exploiting the value effect, and which are able to benefit from other return irregularities as well.

## V. Conclusion

In this paper we have examined the added value of the appealing new concept of fundamental indexation. First we have argued that because the weight differences between a fundamental index and a market capitalization-weighted index are entirely due to differences in valuation ratios, i.e. fundamental values compared to market capitalizations, fundamental indices are by definition nothing more than a new breed of value indices. Next we have argued that fundamental indices more resemble active investment strategies than classic passive indices, because (i) they appear to be inconsistent with market equilibrium, (ii) they do not represent a buy-and-hold strategy and (iii) they require several subjective choices. Because fundamental indices are primarily designed for simplicity and appeal, they are unlikely to be the most efficient way of benefiting from the value premium. The risk/return characteristics of fundamental indices are likely to be even more inferior compared to more sophisticated quantitative strategies, which also try to exploit other anomalies in addition to the value effect.

## References

Arnott, R.D., J. Hsu & P. Moore (2005), Fundamental indexation, *Financial Analysts' Journal*, vol. 61, no. 2 (March/April), p.83-99

Arnott, R.D. & H.M. Markowitz (2008), Fundamentally flawed indexing: comments, *Financial Analysts' Journal*, vol. 64, no. 2 (March/April), p.12-14

Asness, C. (2006), The value of fundamental indexation, *Institutional Investor* (October), p. 94-99.

Blitz, D. C. & P. van Vliet (2007), The volatility effect, *Journal of Portfolio Management*, (Fall), vol. 34, no. 1, p. 102-113

Chan, L. K. C., N. Jegadeesh & J. Lakonishok (1996), Momentum strategies, *Journal of Finance*, vol. 51, no. 5, p.1681—1713.

- Estrada, J. (2008), Fundamental indexation and international diversification, *Journal of Portfolio Management*, (Spring), vol. 34, no. 3, p.93-109
- Fama, E.F. & K.R. French (1992), The cross-section of expected stock returns, *Journal of Finance*, vol. 47, no. 2, p.427-465
- Fama, E.F. & K.R. French (1998), Value versus growth: the international evidence, *Journal of Finance*, vol. 53, no. 6, p.1975-1999
- Hemminki, J. & V. Puttonen (2008), Fundamental indexation in Europe, *Journal of Asset Management*, vol. 8, no. 6 (February), p.401-405.
- Hsu, J. (2006), Cap-weighted portfolios are sub-optimal portfolios, *Journal of Investment Management*, vol. 4, no. 3 (Third Quarter), p.44–53
- Hsu, J. (2008), Why fundamental indexation might – or might not – work: a comment, *Financial Analysts' Journal*, vol. 64, no. 2 (March/April), p.17-18
- Jegadeesh, N. (1990), Evidence of predictable behavior of security returns, *Journal of Finance*, vol. 45, no. 3, p.881-898.
- Jegadeesh, N. & S. Titman (1993), Returns to buying winners and selling losers: implications for stock market efficiency, *Journal of Finance*, vol. 48, no. 1, p.65-91.
- Kaplan, P.D. (2008), Why fundamental indexation might – or might not – work, *Financial Analysts' Journal*, vol. 64, no. 1 (January/February), p.32-39
- Perold, A.F. (2007), Fundamentally flawed indexing, *Financial Analysts' Journal*, vol. 63, no. 6 (November/December), p.31-37
- Perold, A.F. (2008), Fundamentally flawed indexing: author response, *Financial Analysts' Journal*, vol. 64, no. 2 (March/April), p.14-17
- Sloan, R.G. (1996), Do stock prices fully reflect information in accruals and cash flows about future earnings, *Accounting Review*, vol. 71, p.289-315.
- Treynor, J. (2005), Why market-valuation-indifferent indexing works, *Financial Analysts' Journal*, vol. 61, no. 5 (September/October), p.65–69.
- Treynor, J. (2008), Fundamentally flawed indexing: comments, *Financial Analysts' Journal*, vol. 64, no. 2 (March/April), p.14