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## Fundamental Indexation: An Active Value Strategy in Disguise

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### Introduction

Arnott *et al.* (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 by market capitalisation. An important argument put forward by fundamental indexers is that capitalisation-weighted indices are inferior because they necessarily invest more in overvalued stocks and less in undervalued stocks. This is, however, disputed by, among others, Perold (2007), who argues that capitalisation 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,

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fundamental indices are more elegant than traditional value indices, but the key underlying idea remains the same. Next, we 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 whether 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.

### **Fundamental indices capture the value premium**

The weights of stocks in a traditional index are proportional to their market capitalisations. Fundamental indices, however, weight stocks in proportion to their economic fundamentals. Thus, weights differences are entirely due to differences in valuation levels, that is, 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-capitalisation-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-capitalisation-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 then creating a value (or growth) index by market-capitalisation-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 reweight the entire universe of stocks based on fundamental values.

Since the weight 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 capitalisation weighting by itself introduces a drag on performance, because in a market-capitalisation-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. Perold (2007), however, 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-capitalisation-weighted indices historically. A historical outperformance, due to being exposed to an already-known return irregularity, is, however, something that is quite different from a superior theoretical performance, as a result of avoiding some structural drag on performance that is supposedly associated with capitalisation-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 13.1. We observe that when we compare the fundamental indexing strategy to the market index, the alpha amounts to 0.19 per cent per month if we use the Fama–French market factor over the 1962–2005 period, and 0.26 per cent per month if we use the Russell 1000 index over the 1979–2005 period. Both are highly significant from an economical and a statistical point of view. These analyses, however, do not take into account the value tilt that characterises fundamental indexing portfolios. When we add the value and small-capitalisation 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-capitalisation 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 cent per month

Table 13.1 Regression results

	CAPM		Fama–French three-factor	
	Coefficient	t-statistic	Coefficient	t-statistic
<i>Sample period: January 1962–December 2005</i>				
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
<i>Sample period: January 1979–December 2005</i>				
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

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

Sources: Kenneth French website, Datastream.

in the Fama–French analysis and 0.10 per cent per month, or 1.2 per cent per annum, in the case of the Russell data. Thus, we conclude that after adjusting for style exposures, fundamental indexation 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. The alpha, however, 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.

### Fundamental indices resemble active strategies

A fundamental index differs from traditional capitalisation-weighted indices in several important ways. First, the market capitalisation weighted index is unique in the sense that it is the only portfolio that 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 capitalisation-weighted index, there must be some other group of investors with opposing views who underperform, and vice versa. It is not immediately clear, however, which investor characteristics determine whether 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.

Secondly, contrary to a market-capitalisation-weighted index, a fundamental index does not represent a passive, buy-and-hold strategy. Mirroring a cap-weight index requires no turnover, except in the 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 exposure towards momentum compared to a capitalisation-weighted index, as it continuously needs to sell stocks that have done well (for which the weight has increased) and buy stocks that have done poorly (for which the weight has decreased). This may explain why fundamental index providers propose low rebalancing frequencies that make their indices deviate more from the theoretical ideal. In addition to saving on transaction costs, this prevents the fundamental indices from obtaining a large negative exposure to the momentum effect, which historically would have hurt their performance.<sup>7</sup>

Thirdly, 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 (eg 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 to an active investment strategy than to traditional passive indices. Based on these observations, we conclude that fundamental indexation is essentially an active value strategy disguised as an index.

### **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. 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), and is even negative during others (such as the 1990s). Quantitative value strategies that 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 realise that fundamental indexation is trying to benefit solely 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 the medium-term price momentum effect (Jegadeesh and Titman, 1993), the short-term reversal effect (Jegadeesh, 1990), the earnings momentum effect (Chan *et al.*, 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 'behavioural 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-capitalisation-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.

## 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-capitalisation-weighted index are entirely due to differences in valuation ratios, that is, fundamental values compared to market capitalisations, 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.

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## Notes

1. See, for example, the papers of Arnott and Markowitz (2008), Perold (2008), Treynor (2008), and Hsu (2008), all of which appeared in the March/April 2008 edition of the *Financial Analysts' Journal*.
2. More recently, refinements have been introduced that allow some stocks to be, for example, 50 per cent value and 50 per cent growth, but the principle has remained the same.
3. 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.
4. 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.
5. For a vivid discussion of this point, see Asness (2006).
6. Except of course for the trivial case in which the two happen to be exactly the same.

7. The RAFI 1000 still has a slightly negative exposure to the momentum strategy from Fama's website.
8. This information ratio was derived by taking the reported outperformance of 2.15 per cent and dividing this by the associated tracking error of 4.57 per cent.

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