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Is Fundamental Indexation able to time the market? Evidence from the Dow Jones Industrial Average and the Russell 1000

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ABSTRACT

Fundamental Indexation weights stock according to a firm's economic size, not stock price or market capitalization. This means that at least in theory, unlike traditional market capitalization weighted indexes, it prevents overinvestment in overpriced stock and vice versa. It should therefore effectively time the market by avoiding incorrect investment in cyclically mispriced stock. We ascertain if Fundamental Indexation outperforms traditional indexing and whether any outperformance can be attributed to market timing. Using almost fifty years of Dow Jones Industrial Average index and Russell 1000 index returns, we find some evidence of limited market timing but no evidence of overall positive abnormal performance.

1. Introduction

It may be argued that market capitalization-weighted indexes (MCWIs) are suboptimal since, by construction, they must overweight overvalued shares and underweight undervalued shares (Treynor, 2005). To counter this tendency, Arnott et al. (2005b) identify a form of indexing, which they call Fundamental Indexation (FI), where the weights are assigned to stocks on the basis of non-market price measures of a firm's size: book value, revenue, cash flow, dividend, sales, and even employee numbers.[1] Their claim is that such an approach allows assets in an index portfolio to be proportioned to more accurately reflect the true "economic" size of each firm, and that FI is thereby immune to pricing "bubbles."

A number of authors confirm that whilst FI outperforms when benchmarked against the traditional capital asset pricing model (CAPM), it does not against the Fama and French (1993, 1996) three-factor model, which has additional risk premiums for high book-to-equity and small-firm stocks (e.g., Jun and Malkiel (2007), Blitz and Swinkels (2008), McQuarrie (2008) and Malkiel and Jun (2009)). Since FI, by construction, displays a bias toward higher book-to-market equity and small-firm stocks,

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[1] In their study, the authors find that their FI realizes higher returns (excess returns of 1.97% per annum) with similar or lower volatility than benchmark capitalization-weighted indexes such as the Standard & Poor's 500 and Russell 1000. Consequently, they suggest that fundamental indexes provide the basis for implementing passive investment strategies that maintain the characteristics of index investing but avoid the noise due to market prices.

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it is possible to interpret FI's reported performance as a repackaging of known "value" (high book-to-market equity) and "size" effects. Indeed, it has been argued (Arnott and Sauter, 2009) that FI provides a mechanism for cheap and efficient Fama–French risk factor exposure.

Even if FI does not generate significant positive Fama–French alpha, it still may generate enhanced returns relative to standard indexing. FI may outperform standard indexing for three possible reasons: better stock selection; better stock weighting; and/or market timing ability (i.e., dynamic stock weighting). We seek to determine whether the outperformance of FI can be attributed to market timing. In theory, unlike MCWI, FI should not overweight overvalued stock and vice versa. Therefore, when over or under valuation occurs for many stocks simultaneously across the entire market, FI effectively times the market by avoiding incorrect investment in these cyclically mis-priced stock. This leads to enhanced performance when prices mean-revert to their correct value.[2]

To evaluate FI market timing, we obtain the stocks of the Dow Jones Industrial Average index (DJIA) and the Russell 1000 index, which provide 48 years of reliable stock market data over various market cycles that include the 'Nifty Fifty' era of the 1970s, the 1987 stock market crash, the 'Technology' boom and bust of 2000, and the recent 'global financial crisis' (GFC) of 2008.

The DJIA stocks have high liquidity, volume, and depth, and consequently low noise and high market efficiency compared with stocks of smaller firms. These features imply a challenging environment for FI, since any cyclical mispricing that FI seeks to exploit is suppressed. This is why we also analyze the well-known Russell 1000 index; an index which contains one thousand stock and therefore is similar in breadth to the original Arnott et al. (2005) FI.

Our main findings are as follows. Over the period 1962–2009, we find evidence that the stocks of the DJIA and Russell 1000 formed as Fundamental Indexes provide superior returns relative to MCWI, primarily due to exposures to the Fama–French 'value' factor. That is, we find that the outperformance of FI is accounted for in terms of the Fama–French three-factor model and there is no significant positive Fama–French alpha. For the DJIA we find no evidence that FI outperformance can be differentially attributed between up- and down-market movements in any consistent manner whilst due to the many smaller and less efficient stock of the Russell 1000 index, FI does provide some limited evidence of market timing.

We then focus on the two most recent crises where evidence of market timing is strongest and performance differences are evident between FI and MCWI. In the 'Technology bust' of the early 2000s (January 2000 to August 2002), evidence of market timing is strongest, with FI able to tilt away from technology stocks prior to their collapse. Against this, FI underperforms markedly during the global financial crisis (February 2006–2009). Thus, the global financial crisis undermines a good deal of FI's claim to success.[3]

The rest of the paper is organized as follows. Section 2 presents the data and methodology. Section 3 presents the results. Finally, Section 4 summarizes the paper's conclusions.

2. Data and methodology

2.1. Data

To test for market timing we ideally need a long continuous return history in order that the assets which we study encompass the greatest number of economic cycles possible. The DJIA index, first calculated in 1896, was chosen for its long return history. However, due to FI accounting data constraints (see footnote 5) we begin our analysis using data from 1962. We conclude our analysis in December 2009, as this year represents the end of the global financial crisis.

Fundamental Indexation may not be effective with the thirty 'mega-capitalized' constitute stocks of the DJIA. After all, originally Arnott et al. (2005) used one thousand stocks to create and evaluate FI.[4] Therefore, we also test FI using the Russell 1000 index as it has large 'breadth', represents a well-known benchmark and, of all common indexes, is most similar in breadth to the original FI construction.

Since the Russell 1000 index only began in 1984, we create a quasi-Russell 1000 index extending back to 1962[5] (which for the sake of simplicity we refer to as the Russell 1000 index), formed using the thousand largest stock[6] by market capitalization. Monthly data for the stocks of the DJIA for 1962–2009 are obtained from the Dow Jones official website.[7] For both the FI based on the DJIA and the Russell 1000 indexes, company annual fundamental data are collected from the Compustat

[2] In an on-line debate, Arnott suggested that although FI's outperformance relies on exposure to the Fama–French factors, an additional source of FI's success is in its ability to time the market, tilting toward value at appropriate times in the market cycle, which provides approximately 30% of FI's success (see Arnott and Sauter, 2009).

[3] This is consistent with results reported in the financial press, which reported that the FTSE RAFI (Research Affiliates Fundamental Index) US 1000 underperformed the S&P500 by almost 4% during this period (see Greer (2011)). We find 8% underperformance during this period for the Russell 1000 (see Section 3).

[4] Although unlike Arnott et al. (2005), we constrained our investment to just the largest 1000 stock by market capitalization.

[5] We chose not go back earlier than 1962 for the same reason as Arnott et al. (2005) "Although Compustat has data extending back to the 1950s, the number of companies prior to 1962 that had sufficient 5 year data for our purposes is far less than 1000" (p. 85).

[6] This is only for ordinary shares (CRSP/COMPUSTAT share code, SHRCODE = 10 or 11) and excludes, ADRs, RETITs and other share types.

[7] The official website is: http://www.djindexes.com/mdsidx/downloads/DJIA_Hist_Comp.pdf. We use the data to replicate the Dow Jones between 1962 and 2009. The generated DJIA is then reconciled with published figures. About a dozen or so months had errors above 5 index points.