

## Discussion Paper to Grant Application

### Issues with Non-Market Capitalization Weighted Indices in the US

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#### 1. Abstract

Hundreds of billions of dollars are invested using capitalization weighted indices around the globe. A novel approach, non-market capitalization indexation, challenges the long held academic view that market capitalization indexation is optimal. We will attempt to answer vital new questions about these novel indexation approaches, including: How do fundamental indexation performances compare with the performances of the broader class of non-market capitalization indices? What is the explanation behind the performances of fundamental indexation?

#### 2. Background and Aims Of The Project:

Recently, Arnott, Hsu and Moore (2005) document that “Fundamental Indexation” (which is defined as the weighting of stocks in portfolios by “fundamental” measures of size such as book value, revenue, sales, dividends and employment) generates investment performances superior to a merely passive market-capitalisation weighted indexation (outperforming the S&P 500 by about 2% annually on average over the last four decades). The result appears robust over time, across different phases of the business cycle, bull and bear markets and during rising and falling interest rate regimes. Fundamental indexation is clearly positioned to be endorsed with significant funding from U.S. portfolio managers.

This study aims to consider various non-market capitalization indices (including Fundamental Indexation). They include any indexation scheme which does not weight stocks in the index using market capitalization but instead uses some other criterion. Examples include: variables suggested by current asset pricing theory such as beta, “firm size” and “book to market equity” of Fama and French (1996); and variables derived from profitability such as, pay-out ratio (Arnott and Asness 2003), leverage (Bhandari 1988), free cash flow to equity (Jensen 1986) and accruals quality (Sloan 1996).

Despite the work that has been already completed in the US, there are still some crucial outstanding issues:

1. How do fundamental indexation performances compare with the performances of the broader class of non-market capitalization indices?
2. What is the explanation behind the performances of non-market capitalization indices?

The knowledge gained from this US replication will be used in a related study on Australian data. So, this study will 'set the stage' for the proposed related study (which we have applied to the ARC in 2008 (LP0882083)).

### **3. Significance and Innovation:**

"Fundamental Indexation" has recently been advanced in the U.S. as a preferred substitute to standard market-capitalization indexation in (a) offering both superior performances and (b) being immune to market bubbles (Arnott, Hsu and Moore, 2005).

It is possible therefore that "fundamental index" performance and other non-market capitalization based indices are superior to market-capitalization weighted indices because market-capitalization weighted indices are inherently biased to over-priced stocks. Fundamental indexation thereby holds out the possibility that fund managers will be able to improve on their own individual fund performances, while simultaneously avoiding strategies that passively reinforce market 'bubbles' (i.e. self-generating market trends: market inflated booms and busts). This in itself makes fundamental indexation a worthy object of study holding significant benefits for both individual fund managers and the market as a whole.

Answering questions 1 & 2 (above) in the US context would be very interesting for international (particularly those interested in using Fundamental indexation in the US markets) and domestic fund managers who want to understand these key issues as applied to other markets.

### **4. Description of Approach:**

We elaborate on the approach and objectives in this section:

*Objective 1:* To replicate the US studies on the new merged COMPUTSAT/CRSP database available at Monash. This will provide expertise for our proposed Australian based studies and will be required to answer further objectives (below).

*Objective 2:* To answer: How do fundamental indexation performances compare with the performances of the broader class of non-market capitalization indices?

Notwithstanding that fundamental indices might outperform standard market-capitalization weighted indices the question remains: On a risk-return basis, are fundamental indices able to out-perform alternative "style" indices, such as indices formed on weightings on Fama and French "size" and "value," "equal-weighting" or "sector-weighting" indices? Here, the project will aim to cross-reference the performance of a range of approaches to indexation leading to rankings on standard industry risk-measures (such as the Sharpe index, Treynor index, and the MM index). Against such findings, the project will seek to isolate out-performing sets of indices, such to include any combination of fundamental and other variables, as to unlock efficient portfolio strategies. The project will observe the extent to which such performances are a function of cyclic characteristics of the market (bull or bear, interest rate cycles, for example).

*Objective 3:* To answer: What is the explanation behind the performances of fundamental indexation? The out-performance of fundamental indexation in U.S. markets is widely accepted, but the key to understanding the underpinning reasons remains hotly debated. Two divergent lines of inquiry are

presented: (1) superior fundamental index performance is the outcome of market miss-pricing – whereby, in some systematic manner, fundamental indexation avoids the over-pricing of stocks created by market bubbles, and (2) superior fundamental index performance is the outcome of weighting on “fundamental” stock variables that position such stocks to outperform. One of the key aims of this project will be to disentangle these effects and determine both theoretically and empirically from where the benefits of fundamental indexation arise. If explanation (1) prevails, it is likely that the overall out-performance of the fundamental index is founded on a sustained performance (relative to a market-weighted index) during periods of market declines. But, by the same token, the index might be expected to under-perform in periods of market advances. So we must ask: How robust is the index over the business cycle? If explanation (2) appears to prevail, we have a clear indication that fundamental indexation can be improved by more effectively weighting on such key variables. In which case, we must ask: How might such attributes be captured more effectively?

## References

- Arnott, Robert D., Jason Hsu, and Philip Moore, 2005, "Fundamental Indexation," *Financial Analysts Journal*, 61, no. 2 (March/April): 83-99.
- Arnott, Robert D., and Clifford S. Asness, 2003, "Surprise! Higher Dividends = Higher Earnings Growth," *Financial Analysts Journal*, 59, no. 1 (January/February): 70-87.
- Bali, T., Cakici, N., Yan, X., Zhang, Z., 2005, Does idiosyncratic risk really matter? *Journal of Finance* 60, 905-929.
- Banz, Rolf W., 1981, The relation between return and market value of common stocks, *Journal of Financial Economics* 9, 3-18.
- Basu, Sanjoy, 1983, The relationship between earnings yield, market value, and return for NYSE common stocks: Further evidence, *Journal of Financial Economics* 12, 129-156.
- Bhandari, Laxmi Chand, 1988, Debt/Equity ratio and expected common stock returns: Empirical Evidence, *Journal of Finance* 43, 507-528.
- Black, Fischer, 1993, Beta and return, *Journal of Portfolio Management* 20, 8-18.
- Campbell J., Lettau, M. Malkiel and Y. Xu, 2001, Have individual stocks become more volatile? *Journal of Finance* 56, 1-43.
- Chan, Louis K.C., Yasushi Hamano, and Josef Lakonishok, 1991, Fundamental and stock returns in Japan, *Journal of Finance* 46, 1739-1789.
- Fama, E., French, K., 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3-56.
- Fama, E., French, K., 1996, Multifactor explanations of asset pricing anomalies, *Journal of Finance* 51, 55-84.
- Goyal, A., Santa-Clara, P., 2003. Idiosyncratic risk matters! *Journal of Finance* 58, 975-1008.
- Gwilym, O.A, Seaton, J., Suddanson, K. and S. Thomas (2006), "International Evidence on the Payout Ratio, Earnings, Dividends, and Returns," *Financial Analysts Journal*, 62, no. 1, 36-53.
- Hsu, Jason, C. 2006, "Cap-weighted Portfolios are Sub-optimal Portfolios," *Journal of Investment Management*, 4, no. 3, 1-10.
- Malkiel, B., Xu, Y., 1997, Risk and return revisited, *Journal of Portfolio Management* 23, 9-14.
- Treynor, Jack, 2005, "Why Market-Valuation-Indifferent Indexing Works," *Financial Analysts Journal*, 61, no. 5 (September/October): 65-69.
- Xu, Yexiao and Burton Malkiel, 2006, Investigating the behaviour of idiosyncratic volatility, forthcoming in *Journal of Business*.