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Rob Arnott Discusses the Fundamental Approach to Stock Market Indexing

Robert D. Arnott

Mr. Arnott serves as Editor of the *Financial Analysts Journal*. He has authored over seventy articles for journals such as the *Financial Analysts Journal*, the *Journal of Portfolio Management* and the *Harvard Business Review*. In 2002, he established Research Affiliates as a research-intensive asset manager. He has joined forces with PIMCO, serving as a subadvisor, to offer the first global asset allocation strategy to make active use of liquid alternative markets, beyond conventional stocks, bonds and cash. In the past, he also served as a Visiting Professor of Finance at UCLA, on the editorial board of the *Journal of Portfolio Management* and two other journals, and on the product advisory board of the Chicago Board Options Exchange and two other exchanges. He previously developed quantitative asset management products and teams as President of TSA Capital Management (now Analytic Investors) and as Vice President at The Boston Company (now PanAgora), and served as global equity strategist at Salomon (now Salomon Smith Barney). He graduated summa cum laude from the University of California in 1977 in economics, applied mathematics and computer science.

Robert D. Arnott and his firm, Research Affiliates, have created a new series of equity market indexes that use fundamental, valuation-indifferent measures of company size to select and weight stocks in the index. Arnott and his firm created this "fundamental indexing" approach to remedy a perceived defect in market capitalization-weighted indexes, which select and allocate stocks by market value. Arnott and other market theorists believe returns on capitalization-weighted indexes suffer because of their tendency to overweight stocks that are trading above their true fair value. In the interview below, Mr. Arnott discusses the fundamental indexing approach and why it should outperform traditional capitalization-weighted indexes.

Q: To begin, can you explain why you believe capitalization-weighted indexes have a "structural drag" on return?

Arnott: If we could see the future, we would know the true fair value of every company and we may see that share prices are far removed from true fair value. Some companies are going to be way above true fair value, and other companies, where the future is brighter than people think, will be way below true fair value.

One thing we know about capitalization weighting is that a capitalization-weighted index overweights every single stock that is trading above fair value and underweights every single stock that is trading below true fair value. These errors create a drag on the return of capitalization-weighted indexes. However, since we can't know what the true fair value is for any particular stock, we need to construct an index that randomizes these weighting errors.

Equal-weighting a portfolio is one good way to randomize the errors. Half of the stocks will be overweight and half will be underweight. Some that are above true fair value will be underweight; some that are below true fair value will be overweight. So equal-weighting fixes the problem, but it introduces its own, very serious problems. Equal-

weighted indexes are capacity constrained, high-volatility, and result in high turnover in some of the least liquid companies in the market. You just can't use equal weighting on an institutional scale.

In our research we found that if you weight a portfolio based on objective measures of company size, the errors will be randomized. You will not structurally overweight all of the overvalued stocks and underweight all of the undervalued stocks. It's a lot better to be wrong 50% of the time than 100% of the time.

Q: Capitalization-weighted indexes have long been established as the benchmark for equity market returns. How has the academic community reacted to your research?
Arnott: The academic community is split between those who embrace the theoretical purity of the market portfolio, and those who have a more pragmatic view that markets are not necessarily perfectly efficient.

Bill Sharpe, one of the originators of the Capital Asset Pricing Model, thinks this is a form of active management. On the other hand, Jack Treynor, another co-inventor of the Capital Asset Pricing Model, thinks fundamental weighting is a very important advance. Others, like Burt Malkiel and Harry Markowitz, think this concept is interesting and has some real merit.

Q: How would you address Bill Sharpe's critique, that this is active management?
Arnott: Our fundamental index is formulaic, transparent, and is objectively and rigorously constructed. Which of those four terms could be applied to the S&P 500?

The S&P 500 is not objective. It is not formulaic. It is not transparent. And it is not replicable. So, to my way of thinking, fundamental indexing is a lot more passive, and a lot more appropriate for the index label, than the S&P 500.

Q: How did you choose the fundamental factors that are used to weight stocks in the index?
Arnott: The basis for fundamental indexing came from realizing that if you weight companies by their objective size, which means your criteria are valuation-indifferent, you'll eliminate the structural bias and the return drag of capitalization-weighting. So, if you're looking for objective measures of company size that don't take account of share price or market capitalization, the list is relatively short.

Had you asked this same question back in 1961, which is as far back as we could take our research, you would have measured a company's size by sales, revenues, book value, earnings, or its number of employees.

We went through and tested what we thought were sensible measures of company size, like the ones I just mentioned, and found that it doesn't matter which measure you use; the results are much the same. Fundamental weighting added about two percent

over capitalization-weighted indexes no matter which fundamental factor you use, as long as it's valuation-indifferent.

Q: What was the catalyst for creating the fundamental indexing approach?
Arnott: The genesis for this was a series of discussions I had with George Keane, founder of the Commonfund, about concerns he had regarding capitalization-weighted indexes, which he felt were structurally flawed but he wasn't sure what could be better, while at the same time be theoretically sound.

His concern was based on the observation that index funds draw you into every bubble going. For example, at the top of the bubble in 2000, Cisco was four percent of the S&P 500. At the same time, by our measures, Cisco was 0.02 percent of the economy. How do you assign 200 times the weight in the index, relative to a company's scale in the economy, unless you think that company is going to be a more important part of the future economy than WalMart, Ford, General Motors, Proctor & Gamble and two or three other gigantic companies combined? The logic that drives the pricing can lead to bubbles.

As this discussion was broadened to include people like Peter Bernstein and Marty Liebowitz, Marty came up with a tongue-in-cheek comment. He said, "What you really need is a true-fair-value-weighted index." When Marty made that comment, I realized the issue is randomizing your errors so you don't have 75% of the portfolio in the overvalued stocks suffering a return drag, and 25% in the undervalued stocks enjoying a return boost. If you randomize the errors and have half in each camp, then the return drag from the stocks you're overweighting is going to be exactly cancelled by the return boost from the stocks you're underweighting.

Q: Thank you.

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