Indexation's Weighty Issues

Indexation has to rank right up there with Original Sin in the if-it-did-not-exist-we-would-have-to-invent-it department, assuming such a department actually exists. The venerable Dow Jones Industrial Average was price-weighted for the trivial reason this was the only way you could calculate something in the late 1890s and get it out in time to make the evening newspapers.

Once investing became a more scientific discipline, or we should say once investors started pretending it was a more scientific discipline, capitalization-weighting came to dominate. It is a simple and appealing extension of modern portfolio theory. If markets are efficient in the sense prices move in the direction of reflecting all available information, public and private, then the sum of these prices multiplied by their tradable shares outstanding, or capitalization, should reflect investors' best judgment of a market such as the U.S. stock market's value.

The triumph of indexation in general and capitalization-weighted indexation in particular has been a part of the landscape for so long it is easy to forget Burton Malkiel's *A Random Walk Down Wall Street* was published just forty years ago. Malkiel argued it was futile for both individual investors and professional managers to try beating the market as doing so would imply their knowledge and judgment were consistently superior after investment costs were applied. Years of experience, especially during the long bull market from 1982-2000 seemed to bear this out as most mutual funds outperformed only rarely and underperformed consistently. Eugene Fama was awarded a Nobel Memorial Prize in Economic Sciences in 2013 for his work on behalf of the efficient market theory; Robert Shiller received the same Prize even though he described the efficient market hypothesis as one of "the most remarkable errors in the history of economic thought." Economists are a self-hedging bunch.

Creating A Crowded Trade

Any good investment idea attracts capital and creates diminishing rewards for new investors. This appears to be an inherent flaw in capitalization-weighting; money flowing into index funds must, by definition, flow proportionately into the largest stocks and eventually pushes their valuations to unsustainable levels. Some indexes such as the NASDAQ 100 have reacted to this phenomenon by capping the weight any stock can have in the index. The same fund-flow mechanics diminish the contribution of the smaller stocks in the index to its performance. Finally, the fund-flow process works in reverse during bear markets.

Just as high-priced professional athletes often are rewarded for their past deeds and not their potential, capitalization-weighting either rewards or punishes stocks for changes in their capitalization based on past market movements. After all, there are huge differences between a good stock and a good company. An investment mania can push the stock prices of companies with poor fundamentals to indefensible valuations, as was the case with the technology boom of the late 1990s, while leaving the prices of less-glamorous defensive issues languishing. As markets can and do overshoot to the downside, the same phenomenon can be seen for unloved sectors; these can be pushed down to very low price/earnings or price/book ratios.

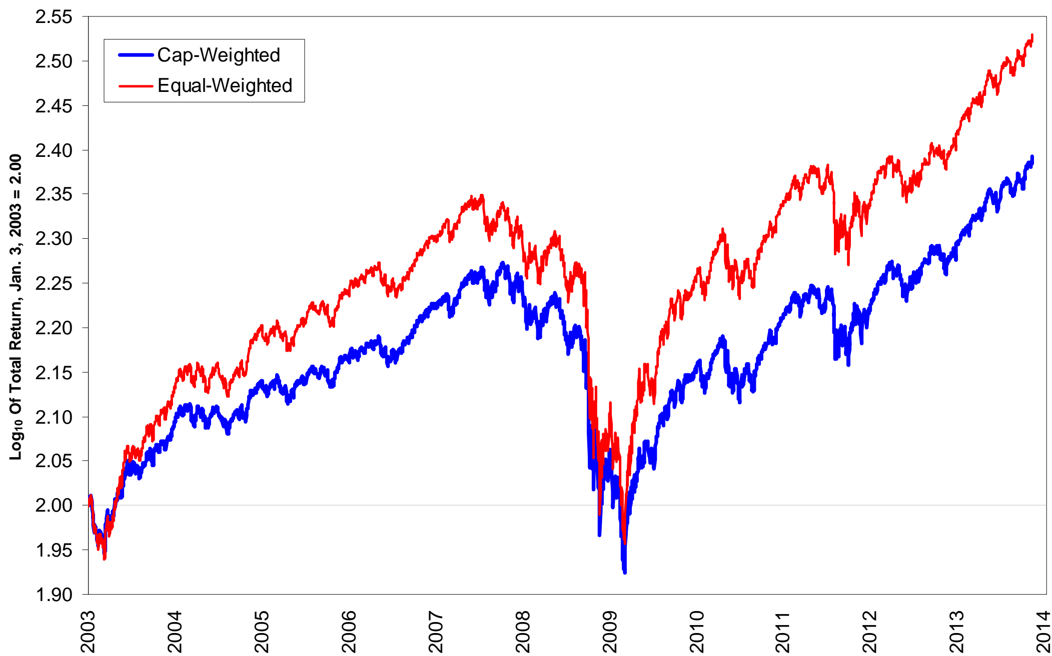
Equal Weighting And Sector Bias

One way to address the inherent problems of over- and underweighting without returning to the days when active fund managers approached the problem by trying to assemble portfolios via stock-picking is to weight the stocks equally. Equal-weighting sidesteps the problems of smaller index members' diminished role in index performance and of investors having to buy or sell very large quantities of the largest capitalization stocks.

The experience of the last ten years with a devastating financial crisis sandwiched between two bullish phases is intriguing. The equal-weighted version of the S&P 500 index outperformed its capitalization-weighted counterpart handily over time at the cost of a major retracement of advantage during the financial crisis itself; this index-level performance history will be addressed later.

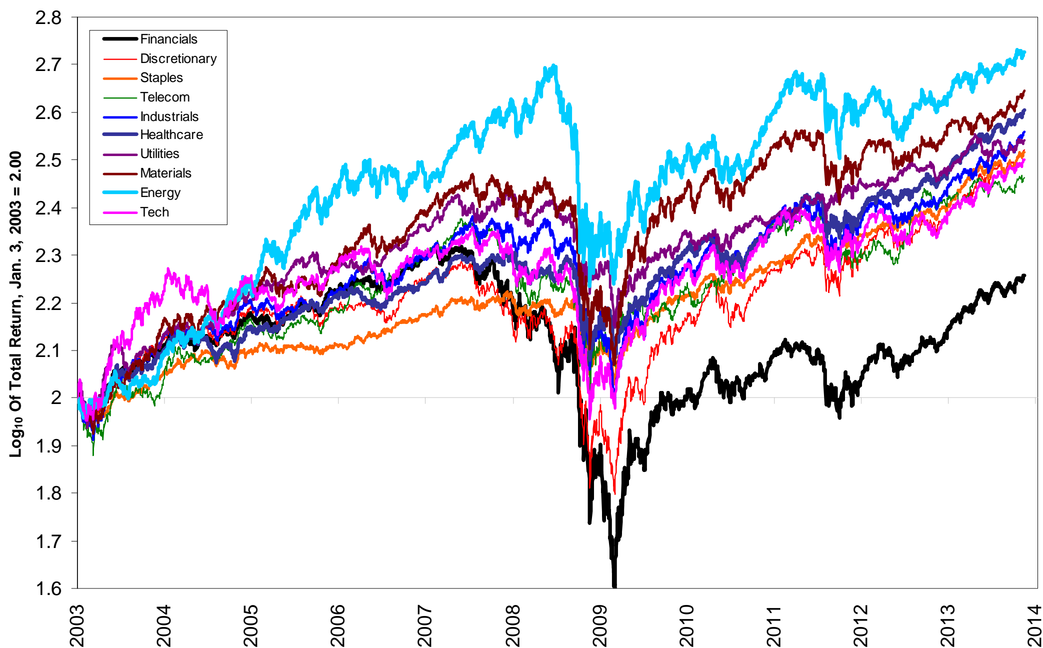
In a nod to methodology, these equal-weighted sector indices are assembled from the base equal-weighted S&P 500 where, in an ideal world, each stock would start out with a 0.2 percent share. Other equal-weighting schemes weight each stock within a sector equally and then weight the sector equally. Once indexers get going, editors at *The Journal of Irreproducible Results* (yes, it exists) gather nearby.

Comparative Total Return Paths



The sector biases produced by long-term investment and economic cycles may be a strong factor here. First, let's map the total return paths of the ten economic sectors. Two sectors stand out immediately in terms of their return paths, financials on the downside and the energy on the upside. The consumer discretionary sector took a beating during the Great Recession but rebounded in a way the financial sector did not.

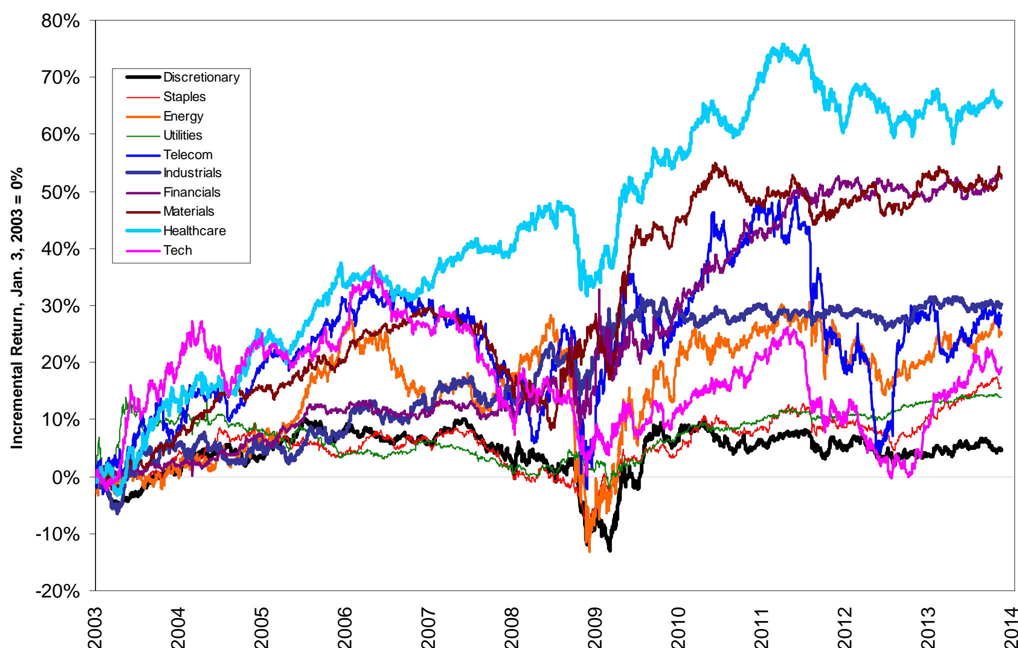
Equal-Weighted Sector Returns



Now let's skip the step of mapping the returns for the capitalization-weighted sectors and go straight to a map of the incremental returns between equal- and capitalization-weighted sectors. Here the healthcare sector's outperformance is noteworthy and is readily explicable. The pharmaceuticals group, or the big drug companies if you will, always rank near the top of industry group capitalization tables. However, these firms have had a great deal of difficulty in keeping their pipelines filled with new "home run" products. Their smaller healthcare-sector

compatriots in biotechnology and the like have been able to generate far higher returns on their smaller capital bases and therefore have been able to generate superior performance once weighted equally.

Incremental Sector Returns: Equal- Vs. Cap-Weighted



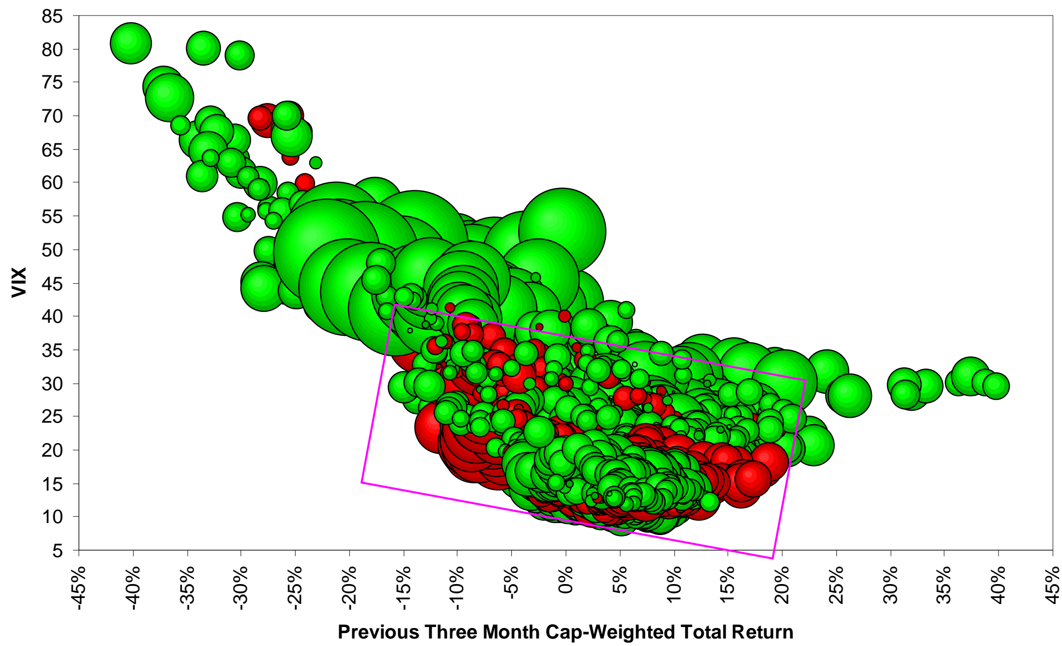
The opposite phenomenon occurred in the technology sector. The equal-weighted index started to lose its advantage once Apple started its amazing ascent in 2006. Nothing could match Apple's returns and with its large and eventually largest weight in the capitalization index, it eliminated the performance advantage of equal-weighting.

If you are starting to sense part of this relative performance game is hindsight, you are correct. No one can forecast the long-term returns of sectors and stocks very accurately; if they could, their expectations would be embedded in the price already. If you knew in advance the large pharmaceutical companies would be unable to maintain their string of blockbuster drugs or if Apple would find a way to revolutionize not just one but several high-margin businesses simultaneously you would not need any sort of index at all. The drearier overall performance for a sector is the better equal-weighting schemes should be vis-à-vis capitalization-weighting schemes.

Relative Performance And Past Results

Now let's switch back from sectors to overall performance level and address index-level relative performance. The initial depiction suggested equal-weighting underperforms as a matter of course in a bear market. Let's try to look at this one with as much foresight as you might have in making an investment decision. If we map the three month-ahead incremental performance of the equal-weighted index against the capitalization-weighted index as a function of the previous three month's total return on the capitalization-weighted index and the current VIX reading, an interesting pattern emerges.

In the chart below, equal-weighted outperformance is depicted with green bubbles and underperformance with red bubbles; the diameter of the bubbles corresponds to the absolute magnitude of the differential. Please note how the red bubbles are clustered in a rectangle between -15 and 20 percent total return over the previous three months and with VIX levels below the top channel of a rectangle declining from upper left to lower right. The equal-weighted scheme did not hit its worst prospective patch during the depths of the financial crisis but rather during its early phases when, apparently, investors clung to larger issues in the hope they would best be able to weather the storm.



The battle over indexation schemes is going to be one of those evergreen affairs like technical versus fundamental analysis or trend-following versus mean-reversion. Both sides will be right at times and proclaim it endlessly and both sides will be wrong and silent at other times. The debate is somewhat pointless unless accompanied by accurate long-term investment forecasts replete with sector return forecasts and forecasts of how concentrated among individual stocks those returns will be.

Restated, the debate will be pointless forever. Will Rogers recognized the problem long ago and offered this advice: "Don't gamble; take all your savings and buy some good stock and hold it till it goes up, and then sell it. If it don't go up, don't buy it."