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COMMENTARY

The 'Noisy Market' Hypothesis

 By **JEREMY J. SIEGEL**
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Although the price-weighted Dow Jones Industrial Average approached its all-time high in early May, the large capitalization-weighted indexes -- such as the S&P 500 or the Russell 3000 -- in which most investors hold their "indexed" investments are still substantially below their tech-bloated peaks reached in March 2000. Those of us who have linked our portfolio returns to these popular indexes wonder whether there is a better way to capture the market's return without enduring the wild swings that characterized the last bubble.

Don't get me wrong. Capitalization-weighted indexation has been one of the great innovations in the last quarter-century. It has allowed millions of investors to capture the return on the market at a very small cost, and has outperformed most actively managed mutual funds. The \$5 trillion invested in portfolios tracking cap-weighted indexes speaks to its popularity.

But we are on the verge of a revolution: New research demonstrates that it is possible to construct broad-based indexes offering investors better returns and lower volatility than capitalization-weighted indexes. These indexes are weighted by fundamental measures of firm value, such as sales or dividends, instead of allowing the market price alone to dictate how much of each firm should be included in the index.


Strong Appeal

The vast majority of indexes, with the exception of the Dow Jones Averages, are capitalization-weighted. This means that the weight of each stock in the index is proportional to the total market value of its shares. This methodology has strong appeal since the return on these indexes represents the aggregate or "average" return to all shareholders.

Strong support for these indexes also emanates from the academic community. The philosophical foundation of these indexes is the "efficient market hypothesis," which assumes that the price of each stock at every point in time represents the best, unbiased *estimate* of the true underlying value of the firm.

The efficient market hypothesis does not say a stock's price is always equal to its fundamental value. But the theory implies it is impossible to tell which stocks are undervalued and which are overvalued without either

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costly analysis or an innate skill possessed only by a chosen few, such as Warren Buffett, Peter Lynch or Bill Miller.

It can be shown that under standard portfolio models, if stocks are priced according to the efficient market hypothesis, then capitalization-weighted indexes offer investors the best risk-return combination. And there is no doubt that capitalization-weighted portfolios have performed very well for investors. Research conducted by Jack Bogle, Charles Ellis, Burton Malkiel and myself has undeniably shown that active mutual fund managers fail, after fees, to keep pace with the market indexes.

But as indexed investing gained adherents, cracks were found in the efficient market hypothesis. In the early 1980s, Rolf Banz and Don Keim showed that small stocks earned an outsized return compared to their risks. And, earlier, Sanjoy Basu and David Dreman discovered that stocks with low price-to-earnings ratios had significantly higher returns than stocks with high P/E ratios; small stocks with low P/E ratios (small value stocks) enjoyed particularly outstanding returns. The magnitude of these size- and value-based returns could not be rationalized using the standard asset pricing models of the efficient market hypothesis.

This caused schizophrenia in the financial community. Efficient-market believers still dominate the field of financial research, but many practitioners, including moonlighting academics, recommend that investors overweight value and small stocks in their portfolios. Eugene Fama from the University of Chicago and Ken French from Dartmouth's Tuck School built a very successful investment firm based on slicing the universe of stocks into value- and size-based sectors to market to large individual and institutional investors.

Since the 1980s, the finance profession has searched in vain for the reason why small and value stocks outperformed the market. Efficient-market diehards maintain these stocks contain deeply buried risk hidden in the historical data. They predict that one day, when a crisis hits and investors critically need to liquidate their portfolios, small and value-based stocks will crumble while large growth stocks will shine.

But if this is true, the data are unfortunately moving in the wrong direction. In the past decade we witnessed a huge tech bubble, 9/11, a recession, major corporate scandals and wars in Afghanistan and Iraq -- yet not only did small and value stocks survive, they outperformed the big cap, high-priced stocks by wider margins than they had in the past.

Current attempts to explain the hidden risks in value stocks remind me of the astronomers in the 16th century who attempted to save the earth-centered Ptolemaic view of the universe. They were forced to add complicated "epicycles" to the orbits of the planets to rationalize their movements in the evening sky; the model collapsed when Copernicus showed that a simple sun-centered solar system was an easier explanation. As with Copernicus, there is now a new paradigm for understanding how markets work that can explain why small stocks and value stocks outperform capitalization-weighted indexes.

This new paradigm claims that the prices of securities are *not* always the best estimate of the true underlying value of the firm. It argues that prices can be influenced by speculators and momentum traders, as well as by insiders and institutions that often buy and sell stocks for reasons unrelated to fundamental value, such as for diversification, liquidity and taxes. In other words, prices of securities are subject to *temporary* shocks that I call "noise" that obscures their true value. These temporary shocks may last for days or for years, and their unpredictability makes it difficult to design a trading strategy that consistently produces superior returns. To distinguish this paradigm from the reigning efficient market hypothesis, I call it the "noisy market hypothesis."

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The noisy market hypothesis easily explains the size and value anomalies. If a stock price falls for reasons unrelated to the changes in the fundamental value, then it is likely -- but not certain -- that overweighting such a stock will yield better than normal returns. On the other hand, stocks that rise in price more than their fundamentals become "large stocks" with high P/E ratios that are likely to underperform.

These discrepancies are not easy to arbitrage away on a stock-by-stock basis. The noisy market hypothesis does not say that *every* stock that changes price does so by more than what is justified by fundamentals. Any particular stock may still be undervalued when it moves up in price or overvalued when it moves down.

New research indicates that there is a simple way that investors can capture these mispricings and achieve returns superior to capitalization-weighted indexes. This is through a strategy called "fundamental indexation." Fundamental indexation means that each stock in a portfolio is weighted not by its market capitalization, but by some fundamental metric, such as aggregate sales or aggregate dividends. Like capitalization-weighted indexes, fundamental indexes involve no security analysis but must be rebalanced periodically by purchasing more shares of firms whose price has gone down more than a fundamental metric, such as sales, and selling shares in those firms whose price has risen more than the fundamental metric.

Robert Arnott, editor of the Financial Analysts Journal and chairman of Research Affiliates, LLC, has published research documenting both the theoretical and historical superiority of fundamentally weighted indexes. It can be rigorously proved that if stock prices are subject to noise, then capitalization-weighted indexes will offer investors risk-and-return characteristics that are inferior to those of fundamentally weighted indexes.

I have long advocated the use of dividends in evaluating stocks. Dividends are the only fundamental variable that is completely objective, transparent and unable to be manipulated by managers who tinker with accounting assumptions. (In the interest of full disclosure, I am an adviser to a company that develops and sponsors dividend-based indexes and products.)

According to my research, dividend-weighted indexes outperform capitalization-weighted indexes and are particularly valuable at withstanding bear markets. For example, the Russell 3000 Index lost almost 50% of its value between the bull market peak of March 2000 and the October 2002 low. Over this same period, a comparable total market dividend-weighted index was virtually unchanged. A dividend weighted index did have a bear market, but it only corrected by 20%. Moreover, the dividend-weighted index bear market didn't start until March 2002, and it lasted only six months (compared to 24 months for the cap-weighted index). The dividend-weighted index is now about 40% above its March 2000 close, whereas the S&P 500 and Russell 3000 are still not yet back to even. A similar performance occurred in other bear markets.

The historical data make an extremely persuasive case for fundamental indexing. From 1964 through 2005, a total market dividend-weighted index of all U.S. stocks outperformed a capitalization-weighted total market index by 123 basis points a year and did so with lower volatility. The data indicate that the outperformance by fundamentally weighted indexes during the same period is even greater among mid-sized and small stocks.

'Value Cuts'

Furthermore, dividend-weighted indexes had better risk and return characteristics than capitalization weighted indexes in each industrial sector and each country that I analyzed. Dividend-weighted indexes even outperformed "value cuts" of the popular capitalization-weighted indexes such as the Russell Value and Barra-S&P Value that attempt to choose those stocks whose prices are low relative to fundamentals.

With the advent of fundamental indexes, we're at the brink of a huge paradigm shift. The chinks in the armor of the efficient market hypothesis have grown too large to be ignored. No longer can advisers claim that capitalization-weighted indexes afford investors the best risk and return tradeoff. The noisy market hypothesis, which makes the simple yet convincing claim that the prices of securities often change in ways that are unrelated to fundamentals, is a much better description of reality and offers a simple explanation for why value-based investing beats the market.

If you are a fan of indexing, as I and so many other investors are, you are no longer trapped in capitalization-weighted indexes which overweight overvalued stocks and underweight undervalued stocks. Devotees of value investing who are searching for a simple, low-cost indexed portfolio in which to hold their stocks need wait no longer. Fundamentally weighted indexes are the next wave of investing.

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