

Are Markets Efficient? -- Yes, Even if They Make Errors

Burton G. Malkiel
Wall Street Journal
December 28, 2000

There is an old story about a finance professor and a student who come upon a \$100 bill lying on the ground. The student stoops to pick it up. "Don't bother," the professor admonishes. "If it were really a \$100 bill, it wouldn't be there."

This story illustrates what financial economists mean by efficient markets. Markets can be efficient even if investors are subject to overconfidence and errors in judgement. Markets can be efficient even if they make errors in the valuation of individual stocks and exhibit greater volatility than can apparently be explained by fundamentals such as earnings and dividends.

Many of us economists who believe in this efficient market theory do so because we view markets as amazingly successful devices for reflecting new information rapidly and, for the most part, accurately. Above all, we believe that financial markets are efficient because they don't allow investors to earn above-average returns without taking above-average risks. In short, we believe that \$100 bills are not lying around for the taking.

While the efficient market theory has been the mantra of my generation, it has come under increasing attack from a new breed of economists. Their work has emphasized psychological and behavioral elements of stock-price determination; they believe future stock prices are somewhat predictable on the basis of past stock-price patterns and certain "fundamental" valuation metrics.

In their view, value stocks -- those with low ratios of stock prices to earnings and book values -- are alleged to outperform growth stocks, while small-company stocks supposedly do better than large-capitalization stocks. They believe that stock prices sometimes underreact to news, creating some short-run momentum, as well as sometimes overreact to events, creating price reversals that can be exploited by investors. Behavioralists also emphasize that the arbitrage activities of rational professional investors, who might be expected to bring stock prices back to fundamental values, are often impossible to execute and, in any event, risky and therefore limited.

These attacks on the efficient market theory are far from convincing. Some of the market patterns discovered may have rational causes; others may be spurious. But none of them are dependable in all time periods. And there is no evidence that rational investors can exploit any of the alleged mispricing in securities markets to earn above-average returns.

Many of the statistical patterns behaviorists emphasize could have rational as well as psychological explanations. Some long-run evidence suggests that growth stocks produce lower returns than value stocks. Behavioralists argue that this reflects investor overconfidence about optimistic growth forecasts and overpricing of growth stocks. But it is also possible that stocks selling at low valuations relative to their book values reflect some degree of financial distress and riskiness, so they should offer higher rates of return.

Behavioralists also believe stock prices exhibit reversals because individuals overreact to recent events. But reversals for the market as a whole could be caused by the tendency of interest rates and risk perceptions to fluctuate, meaning that stock prices are simply rationally adjusting to underlying economic conditions.

Many of the predictable patterns behaviorists claim to find in stock prices may be the result of endlessly mining the vast financial data banks now available until they cough up some seemingly significant, but wholly spurious, relationship. Moreover, findings of underreaction appear in the data about as frequently as overreaction and so could be random occurrences consistent with market efficiency. Many supposedly exploitable price patterns tend to become marginal or even disappear when alternative measurement approaches are used.

Even the strongest empirical regularities in the stock market aren't dependable. For example, small-cap stocks have historically outperformed large-cap stocks, while value stocks have outperformed growth stocks. But investors acting on that finding would have suffered very disappointing investment results indeed over this past decade of high-tech investment.

And what of the behavioral tenet that when psychological contagion pushes price-earnings ratios well above, and dividend yields well below, their historical averages, poor investment results must follow? An investor who followed that advice would have sold out in the mid-1990s when the stock market was less than half its present value. While the "Dogs of the Dow" strategy of buying the depressed highest dividend yields in the Dow worked brilliantly in back tests, when mutual funds were recently introduced based on that technique the dogs didn't hunt.

Finally, even if systematic pricing patterns persist over time, it may be impossible to exploit them. One pattern my colleagues at Princeton and I attempted to exploit was the overreaction phenomenon leading to return reversals. We simulated a strategy of buying those stocks with the poorest three- to five-year performance (the losers) and selling those stocks with the best three- to five-year performance (the winners). We found that statistical patterns of return reversals held up and were strongly significant: The losers later enjoyed better performance and the winners performed more poorly. What the losers did not produce, however, were excess returns: The returns for both groups were the same. There was statistical evidence of mean reversion but no inefficiency that could be exploited for gain.

As Richard Roll, a brilliant financial economist and active money manager, has said, "I have personally tried to invest money, my client's and my own, in every single anomaly and predictive result that academics have dreamed up. And I have yet to make a nickel on any of these supposed market inefficiencies. An inefficiency ought to be an exploitable opportunity. If there's nothing investors can exploit in a systematic way, time in and time out, then it's very hard to say that information is not being properly incorporated into stock prices. Real money investment strategies don't produce the results that academic papers say they should."

As further evidence of how difficult it is to outguess the collective wisdom of the market, consider the relative performance of index funds (that simply buy and hold the entire market portfolio) and active mutual-fund managers. While more than half the active managers are beating the indexes so far in 2000, the long-run results are devastating. Over the past three-year,

five-year and 10-year periods, more than 75% of active managers underperformed index funds when both are measured after expenses. Those that do outperform in one period are not typically the ones who outperform in the next.

There are some exceptions like Peter Lynch and Warren Buffett, but you can count the truly outstanding long-term overachievers on the fingers of one hand. If markets were nearly as inefficient as some would believe, it would be easier for well paid professionals to profit at the expense of those who make systematic mistakes in processing information. As Rex Sinquefeld, co-author of a thorough compendium of past stock returns, has said: "There are three classes of people who don't think markets work; the Cubans, the North Koreans and active money managers."

To be sure, we sometimes know in advance of isolated instances of mispricing. My favorite this year occurred when 5% of Palm Pilot shares were spun off by its parent 3Com, which retained the other 95%. The market immediately priced Palm Pilot shares at a valuation that made 3Com's ownership interest "worth" more than \$50 billion, much more than the entire \$28 billion market capitalization of the parent company. It was as if the operational component of 3Com had a negative value. The mispricing persisted for a while because not enough Palm Pilot shares were available for borrowing to effect a profitable arbitrage. But over time, and with more Palm shares available, the mispricing was corrected. The story illustrates that even occasional irrationality in market prices doesn't create a profitable trading opportunity.

In summary, I remain skeptical that markets are systematically irrational and that knowledge of such irrationalities can lead to profitable trading strategies. Indeed, the more potentially profitable a discoverable pattern is, the less likely it is to survive. This is the logical reason one should be cautious not to overemphasize apparent departures from efficiency.

It is always possible that new patterns will emerge and be discovered, but such patterns must be exploited immediately because they are unlikely to last. The advice I give my students is slightly different from that of the finance professor of the story: "If you see a \$100 bill on the ground, pick it up right away because it surely won't be there for long."