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Research on Financial Markets: What's in it for the Small Investor?

A Random Walk Down Wall Street: The Time-Tested Strategy for Successful Investing (eighth edition). *By Burton G. Malkiel, W.W. Norton, New York, 2003, 352 pages, $29.95.*

BOOK REVIEW

By James Case

At what point does a book become a classic? With a million copies sold over thirty years, seven previous editions, and untold printings, the one under review would seem to qualify by almost any standard. It connects the mountain of research performed since about 1950 on stock, bond, real estate, and insurance markets with retail (as opposed to institutional) investment strategy. The take-home message is that one can accumulate—on a perfectly ordinary income—a very substantial nest egg over the course of a working lifetime. One need only observe a few simple rules. For instance, a $500 purchase of shares in Vanguard's S&P 500 Index Fund on January 1, 1978, followed by regular monthly purchases of $100 each through December 2001, would have built 288 payments totaling only $29,200 into an account worth $224,018!

Malkiel began his career on Wall Street, but soon departed for grad school and the groves of academe. Since then he has managed—for more than forty years—to keep an active foot in each camp. While teaching economics at Princeton, then Yale, and now Princeton again, he has continued to advise investors of every stripe, while "participating successfully" on his own behalf in a wide variety of financial markets. He declines to quantify his own success as an investor, on the ground that academics are supposed to be dedicated "seekers of knowledge, not of financial reward." Yet he feels obliged to disclose that he currently chairs the investment committee of an insurance company that manages more than half a trillion dollars in assets, and sits on the board of an investment company that controls a comparable amount.

Malkiel is perhaps best known for his role in creating the first index funds. No such thing existed in 1973, when the first edition of *Random Walk* appeared. Yet academic research had firmly established that few if any money managers were able to outperform the Dow and S&P 500 indices on a continuing basis. From this Malkiel concluded that small and/or part-time investors would be better served by a "passive" investment strategy—meant only to duplicate the gains recorded by the S&P 500 index—than by one intended to beat that measure of market success. A mutual fund guided by such a strategy would simply buy and hold the stocks represented in the S&P 500 index, thereafter buying and selling only as new issues were added to the index to replace merged or delisted ones, thereby avoiding the transaction costs required for the implementation of more "aggressive" investment strategies. Malkiel predicted that such a fund would appreciate more rapidly—over periods of five years or longer—than all but the most successful "actively managed" mutual funds.

For that or other reasons, a variety of index funds soon sprang into existence. Malkiel reports with justifiable pride that they have performed—for more than a quarter of a century in some cases—very much as he predicted in the 1973 edition they would. Indeed, over the twenty years ending December 31, 2001, S&P 500 index funds returned more than 15% on investment per year, while the average equity fund returned less than 13%. And index funds based on the broader Wilshire 5000 index earned even more than the S&P funds. Yet Wall Street insiders miss few opportunities to disparage index funds for squandering whatever chance the small investor might otherwise have to earn an above-average return. Seldom do they mention that index funds reduce their own opportunities, as managers, to generate commissions.

The first edition of Malkiel's book offered—in a chapter titled "How Come Stockbrokers Own Yachts and Their Customers Don't?"—a remarkably frank discussion of actual and potential conflicts of interest between investors and their broker/advisers. Every subsequent edition has contained some discussion of this touchy subject, but the new one contains far more, in part because of the massive quantities of muck raked up by the ongoing investigations of Enron, WorldCom, Qwest, Xerox, and the like. In one notorious incident, an analyst who recommended selling Donald Trump's Taj Mahal bonds (on the grounds that borrowers seemed headed for default) was summarily fired by his firm after Trump himself threatened legal action. More famously, Merrill Lynch was forced to reach a $100 million out-of-court settlement with New York and other states, after attorney general Eliot Spitzer discovered private e-mails in which the firm's most celebrated analyst derided—often in scatological terms—a number of the Internet and New Economy stocks he was simultaneously touting to the public.

The new edition devotes considerable space to the recent bubble in Internet/New Economy stocks—"the biggest bubble of them all"—comparing it with other historic market bubbles, such as the Dutch tulip bubble of 1634–37, the South Sea bubble of 1720–21, the bubble in U.S. railroad stocks that began in 1857, and the great Wall Street bubble of 1928–29. Such bubbles are of particular interest to Malkiel, because they are often said to disprove the efficient market hypothesis, on which he predicates his "time-tested investment strategy." That oft debated hypothesis holds—in its simplest form—that the current prices of individual stocks and bonds constitute the best possible estimates of their "true asset values." The EMH is intimately related to the "random walk" theory of asset price movements.

The simplest description of the random walk process involves a flesh-and-blood walker, who repeatedly tosses a (possibly biased) coin, taking a single step to the right (left) whenever the coin comes up "heads" ("tails"). Many writers extend the definition to

include any random process $\{W_t\}$ for which

$$W_{t+1} = W_t + \theta_t, \tag{1}$$

and for which the "random shocks" θ_t are iid. Different variations on the random walk theme result from different choices of the governing distribution. Normal and Bernoulli distributions furnish the simplest—though by no means the only useful—models. The EMH is most easily justified on the assumption that the quantities $W_t = \log P_t$ associated with a typical financial price sequence $\{P_t\}$ satisfy (1). In that event, $\{P_t\}$ is said to perform a "geometric" random walk and $\{W_t\}$ an "arithmetic" one. An application of the expectation operator E to either side of (1) reveals that the best prediction of W_T possible at time $t < T$ is $W_t + (T - t)E(\theta_t)$. So if $E(\theta_t) = 0$, X_t is the best prediction of X_T for all $T > t$! Other cases can be reduced to the "trend-free" case $E(\theta_t) = 0$ in an obvious manner. The random shocks θ_t consist of "new information" regarding the current worth of the underlying asset.

Researchers have suggested that someone or something is constantly at work—with seldom interrupted success—to ensure that financial assets remain permanently overpriced. Have recent investigations of corporate scandals done anything to discredit such a conclusion?

After a long period of near universal acceptance, at least among academic economists, the EMH has come under renewed attack from the emerging discipline of behavioral finance, whose leading practitioners include the 2002 Nobel laureates Daniel Kahneman and Vernon Smith, and Robert Shiller, the Yale economist from whom Fed chairman Alan Greenspan allegedly borrowed the fateful phrase "irrational exuberance." These iconoclasts stress the fallibility of human decision making, and its vulnerability to overconfidence, misplaced trust, fads, fashions, and simple hubris. Malkiel distinguishes between weak and strong forms of the EMH, and explains in detail why—in his opinion—attacks on both have failed to discredit either.

Weak forms of the EMH state that the history of stock prices contains no information that would enable investors to profitably predict future movements, while stronger forms allege that no other publicly obtainable information would be more helpful. Malkiel concedes that financial market prices do sometimes diverge from underlying values, but points out that they seldom stray far enough or for long enough to create exploitable investment opportunities. Moreover, when windows of opportunity do open, they typically close too soon to allow more than a handful to reap the rewards of discovering them.

Some years ago researchers documented one of many cases in point, known as the "January effect": Stock prices tend to decline slightly in late December, as investors engage in last-minute selling meant to minimize their year-end tax liabilities, and to rise again in early January as the cash so generated is reinvested. Thus, an opportunity sometimes exists to generate short-term capital gains by buying low at year's end and selling high a week later. Once this effect was documented, however, the number of investors buying in late December and selling in early January increased to the point that the rewards of such behavior ceased to justify the associated brokerage fees. Even before the existence of this (never large) window of opportunity was fully confirmed, it had already begun to close. Imitation—the sincerest form of flattery—soon eliminates most if not all get-rich-quick opportunities in financial markets.

Not all of Malkiel's arguments are so persuasive. He seems to suppose, for instance, that because the prices of financial assets evolve almost as unpredictably as random walks, they cannot differ greatly from the "true values" of those assets. To see that this is untrue, let $\{P_t\}$ and $\{V_t\}$ denote the price and true value sequences of some publicly traded financial asset, such as a share of the Vanguard S&P 500 index fund. Forget for the moment that $\{V_t\}$ is unobservable. Next, write $X_t = \log P_t$ and $Y_t = \log V_t$, and suppose that

$$X_{t+1} = (1 - a)X_t + aY_t + \xi_t$$

$$Y_{t+1} = aX_t + (1 - a)Y_t + \eta_t, \tag{2}$$

where $\{\xi_t\}$ and $\{\eta_t\}$ are (possibly correlated) sequences of random variables. If $a = 0$, and $\{\xi_t\}$ and $\{\eta_t\}$ are both iid, $\{X_t\}$ and $\{Y_t\}$ execute unrelated (arithmetic) random walks, causing P_t and V_t to perform unrelated (geometric) random walks. Nothing then prevents P_t and V_t (X_t and Y_t, respectively) from drifting arbitrarily far apart. But if a is small and positive, the quantities X_t and Y_t are held together by an elastic bond, as if two physical random walkers were conjoined by a length of bungee cord. They still can drift arbitrarily far apart, but almost surely won't. Indeed, if $\xi_t = \eta_t$ for $t' < t < t''$, X_t and Y_t will approach one another at an exponential rate during that period. Figure 1 suggests that any elastic bond joining $\{X_t\}$ and $\{Y_t\}$ is less than overpowering.

The more regular of the two histories depicted in the figure represents Robert Shiller's best estimate of $\{Y_t\}$, and the other the historic values of $\{X_t\}$, as explained in [1]. Shiller argues that, whereas it is possible to obtain only coarse estimates of the rightmost values of Y_t, the leftmost 80% of his curve is subject to little if any dispute. It is evident that X_t exceeds Y_t most of the time, suggesting that someone or something is constantly at work—with seldom interrupted success—to ensure that financial assets remain permanently overpriced. Have recent investigations of corporate scandals done anything to discredit such a conclusion?

An obvious trait of (2) is that, by causing ξ_t to exceed η_t for $t' < t < t''$, P_t can be forced to grow more rapidly than V_t for a time. Such accelerated growth might be accomplished by adding "artificial" random shocks ξ_t to the "naturally occurring" η_ts, so that $\xi_t = \eta_t + \zeta_t$ for $t' < t < t''$, or by so enhancing the effect of the messages η_t on $X_t = \log P_t$ that (for $b > 0$ and $c > 1$) $\xi_t = b + c\eta_t$. Better still, one might do a little of both. However, (2) implies that the increments $X_{t+1} - X_t$ will exceed the increments

$Y_{t+1} - Y_t$ for which $t' < t < t''$ if and only if

$$\xi_t > \eta_t + 2a(X_t - Y_t) \qquad (3)$$

during that time, meaning that the quantities ξ_t must exceed the quantities η_t by an *ever increasing amount* if the points (t, X_t) are to lie along a line of slope M during $t' < t < t''$, while the points (t, Y_t) are to cluster simultaneously about a line of slope $m < M$. Hence, $\{P_t\}$ can quite easily be made to exhibit a growth rate (think logarithmic time derivative) $M > m$ for a short time, but seems incapable of sustaining such "supernormal" performance indefinitely. When such efforts fail—as eventually they must—markets crash.

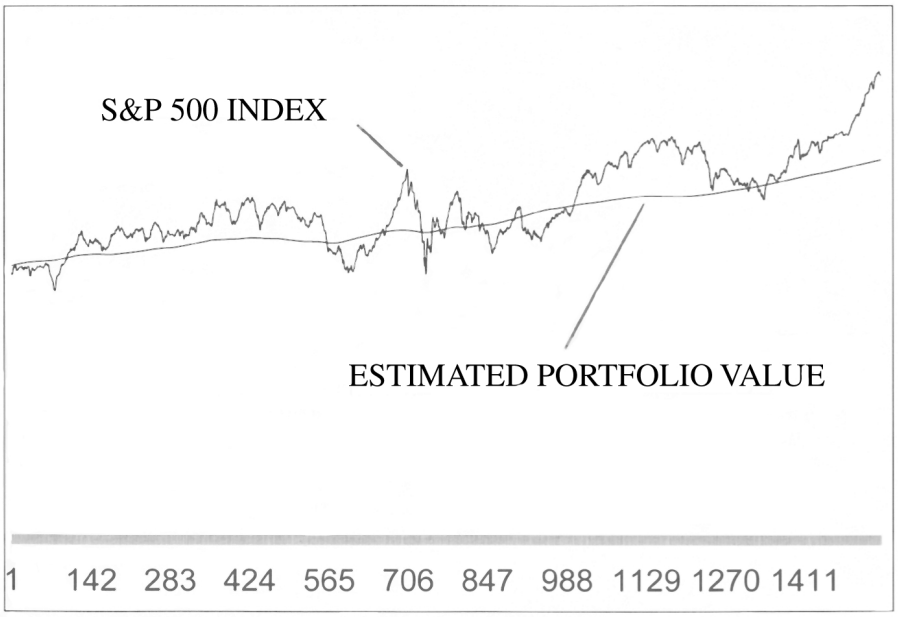

Figure 1. *The volatility (variability) of the S&P 500 stock index contrasts vividly with (plausible, restropective) estimates of the value of the underlying stock portfolio. Each curve consists of 1549 monthly data points, beginning with January 1871. The vertical scale is logarithmic.*

Three remarks concerning the model (2) seem to be in order. First, the elastic bond between X_t and Y_t represented by $0 < a < 1$ causes a rapidly rising $\{X_t\}$ to lift $\{Y_t\}$ with it. This is a real effect, rather than a shortcoming of the model: A rapidly rising stock price does enhance a firm's value—by reducing its "cost of capital," facilitating executive/technical recruitment, and otherwise improving short- to intermediate-term growth prospects. Financial manipulation really does (temporarily) "create wealth." Second, the unobservable quantity $Y_t = \log V_t$ can be eliminated from the model equations to obtain

$$X_{t+2} = 2(1 - a)X_{t+1} - (1 - 2a)X_t + \xi_{t+1} - (1 - a)\xi_t + a\eta_t, \qquad (4)$$

which reduces to a standard ARIMA process when $\{\xi_t\}$ and $\{\eta_t\}$ are normally distributed. Unless the auto-regressive (AR) part of such a process dominates the moving average (MA) part—which seems never to happen with financial series—realizations $\{X_t\}$ of (4) are not significantly more predictable than the pure random walks $\{W_t\}$ obtained from (1). Finally, the fact that most of the bubbles represented in Figure 1 lasted for many years indicates that opportunities to "get in on the ground floor" are almost as rare as fortunes made by foretelling the implosion of market bubbles.

In short, Malkiel has no need to predicate his sound investment advice on occult mysteries like the EMH. Far weaker hypotheses—such as (2) and (4)—meet his needs equally well. Whether bubbles are the rule or the exception in financial markets, the advice investors need—and the thinking behind it—is clearly explained in Malkiel's extensively updated classic.

References

[1] R.J. Shiller, *Irrational Exuberance*, Princeton University Press, Princeton, New Jersey, 2000.

James Case writes from Baltimore, Maryland.