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ECONOMICS COMMENTATOR

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Random Walks, Lemmings, And Behaviorism: Looking For A Market Lodestar

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Random Walk

Burton Malkiel defines a random walk as "one in which future steps or directions cannot be predicted on the basis of past actions." Within the context of the stock market, a random walk for a stock's price means that it is as likely to fall as to rise, regardless of previous price performance (Malkiel, 1996). Essentially, random walk implies that "winners" could not consistently be picked. The *Wall Street Journal* lends credence to this hypothesis with its long-running contest of "darts versus the experts," where stocks selected by darts tossed at the financial page are matched, performance-wise, with stocks selected by market experts. The random walk hypothesis is not particularly popular in the general financial community as it implies that financial management brings only a layer of cost – and the investor is better served by investing in a fund that closely represents the overall market. "Random walk" was derided as an academic contrivance by many in the financial sector. However, the hypothesis gained support as financial information flowed more freely and in greater volume over time, and market/industry/firm transactions became more transparent.

Random walk can be viewed as a variation on the efficient market hypothesis. An efficient market can be proposed to exist when the following conditions hold:

- a. Many active, well-informed, and rational investors participate in a market where no one individual has any power to manipulate a security's price.

- b. Information is relatively costless and is equally available to all investors.
- c. New information is generated randomly, with information events independent of one another.
- d. Investors act quickly and rationally in response to new information.

To a large extent, these conditions reflect the current state of securities markets. Moreover, in their presence, new information about corporations will be quickly incorporated into stock prices. Furthermore, price movements are independent of one another and tend to be random in nature. That is, today's price change is in response to new information – different information from that which drove yesterday's price change. (Jones, 2000).

The Efficient Market Hypothesis (EMH), to the extent that it is held, is disquieting to the financial industry. A "true believer" would have no use for technical analysis, evidence on deviations from intrinsic value, or money management skills in general; he/she would simply take what the market gives them by buying into a fund (or selecting individual stocks) that is/ are representative (a blood sample) of the overall stock market.

That being said, the EMH is most useful as a benchmark for efficiency; a means of comparison between the ideal and the actual. Many studies have attributed strong deviations from EMH to investor overreaction and underreaction, the January effect, the small-cap effect, the weekend effect, herd behavior, momentum investing – to name a few. Most investors believe they can outperform the stock market; otherwise, they'd place their savings in index funds and be done with it.

The decision to buy a particular stock at a particular time and the choices among alternative investments are grounded in psychological and sociological factors as well as economics. Rational economic man (*homo economicus*) recognizes that irrational investor behavior is normal and must be factored into the investment decision. In this day of information overload, few investors are zealots who

ascribe to only one theory of sound investing; be it fundamental-valuation; technical analysis; or behavioral reactivity. The irony, and the focus of this paper, is that as market information becomes more voluminous, timely, accurate, and universally available, the validity of the Efficient Market Hypothesis may diminish.

Fundamental Analysis

Contemporary investment philosophy can be segmented into four loosely perimetered camps; fundamental value, technical analysis, momentum, and behaviorist. Fundamentalists attempt to arrive at a firm's intrinsic value by looking at earnings, dividends, earnings growth, and income/balance sheet ratios. After calculating a stock's intrinsic value with a standard formula, it is compared to market price to determine whether the security is a buy or a sell. John Burr Williams, in *Theory of Investment Value*, was first to develop an actual formula, the Dividend Discount Model (DDM) for calculating a stock's fundamental value. (Malkeil, 1996). However, the "value school of investment" was institutionalized by Benjamin Graham, who with David Dodd authored *Security Analysis* and, individually, *The Intelligent Investor*. Graham took a conservative tack in his investment strategy; carefully drawing the line between "speculation" and investment. Per Graham, "An investment operation is one which, upon thorough analysis promises safety of principal and an adequate return. Operations not meeting these requirements are speculative." (Graham, 1973).

Technical Analysis

Technical analysts pride themselves in being oblivious to intrinsic value. Rather, it is the potential supply (sellers) and demand (buyers) for a stock that matter. Technicians study price and volume data for trends that tend to repeat themselves over time and form the basis for the buy/sell decision. Applying patterns of past stock performance to present market data enables the technician to identify buy and sell signals.

Momentum Investing

Momentum investing hinges about a variation on the theme of inertia – that a body in motion tends to remain in motion. Hence, a company whose growth is flat tends to remain that way and a stock experiencing rapid growth is likely to do so for a considerable period of time. Responding to sustainable growth signals,

investors exhibit lemming-like behavior in rushing into a stock, providing evidence of the "bandwagon effect", where an object becomes more valuable as more people buy it. Momentum investors forgo searching for hidden value in perceptibly "dead" stocks and, instead, look for companies experiencing some signal event that is likely to drive stock price upward for an extended period of time. Momentum investors tend to lag behind value investors in buying a particular stock and tend to hold the stock after value investors have taken profits.

Animal Spirits and Behaviorism

Behavioral investing involves the psychological analysis of overall market behavior and individual investors, who, in the aggregate, comprise the market. According to Shefrin (2000), there are three psychological elements underlying investor behavior. First, investors tend to fall back on past experience in establishing their future investment strategies. The *Oxford Dictionary and Thesaurus* defines the heuristic method as "a system of education under which pupils are trained to find things out for themselves." Investors develop and adhere to certain rules of thumb in undertaking financial investments. These benchmarks tend to be error-prone and, as a result, most investors tend to act in a pre-disposed and biased manner. Investors will prefer certain behavioral frames to others. Erroneous heuristic guidelines and frame dependence may, in turn, affect stock prices and move them away from, rather than toward, intrinsic value. It follows that such behavior will make markets less, rather than more, efficient (Shefrin, 2000).

John Maynard Keynes aptly tied the term "animal spirits" to investor behavior. Animal spirits, per Keynes, are not solely instinctive reactions to new market information; they are a positive for the marketplace; driving trading and transactions when informational signals are mixed – or absent. Given uncertainty, and the lack of a clear (lodestar) course of action, animal spirits provide the investor with the impetus to overcome risk aversion (Matthews, 1991).

At the core of investor behaviorism and the subsequent deviations of stock prices from fair value and bubble creation, lies investor overconfidence. Daniel, et al. (1998) proposes that variations in investor confidence stem from "biased self-attribution." If the investor becomes increasingly confident in his ability to ferret out

important data, assimilate and evaluate it, generating "private information" he will underestimate his own forecasting errors while overvaluing his abilities as a stock-picker. Moreover, the informed, overconfident investor will overreact to his self-generated private information and under-react to public signals (stock split announcements, dividend changes, insider buying or selling) that may counter or corroborate his personal perspective on a stock. Studies indicate that personal overconfidence, in general, tends to be stronger for more complex tasks (illness diagnoses, stock analysis) than for relatively straightforward, but cerebral, tasks – such as mathematical calculations. The overreaction – correction behavior in the stock market is reflected in negative long run autocorrelation in market returns such as excess volatility in stock prices (Daniel, et al., 1998). Moreover, when public information supports investors' private signals, confidence levels rise significantly. However, when public information contradicts private signals, confidence levels fall only modestly as investors attribute (investment) failure to external events – beyond their control.

Psychologists find that people systematically discount certain types of information when it is inconsistent with a held set of beliefs while placing a premium on information that fits their paradigm. Odean (1998) notes that if overconfident traders weigh their own (self-generated) signals more than public or common signals, the private signals will be dissimilar among traders and result in a higher volume of trading – than if all traders gave a greater weight to the common signals. Psychologists have opined that the motivational state is characterized by impulses (animal spirits) such as the particularly American taste for victory, per se, and aggression (Matthews, 1991). Applying motivational theory to investor behavior, Princeton's Daniel Kahneman writing in *Psychology Today* (1999) proposes the following: (a) investors (American) are enamored with their own skills and regard themselves to be better than other investors; (b) the disutility of losses is greater than the utility of gains, with the result that investors hold onto losers – in tacit denial of having made a poor choice; and, (c) investors like to be in control and evidence this in (too) frequent trading to create the illusion of a structured approach to wealth enhancement.

Individuals tend to weigh more recent information more heavily and short weight older information. If all the traders in the stock market

were homo economicus, the market would act as if it had a "single driver." Biased self-attribution inserts a "second driver" into the investment seat which, in turn, distorts prices and increases volatility (and volume) while reducing market efficiency (Odean, 1998).

Internet, Information Overload, Dimming Lodestar

The modest point of the paper is that financial markets will become more volatile over time. The added volatility, ironically, will stem in large part from improved technology which, in theory, should make the very same markets more efficient and less volatile.

In *Irrational Exuberance*, Robert Schiller traces the various factors from the media, to the maturing of the baby boomers, to the internet, the growth of mutual funds, hegemony of the US in the international arena, that will be behind the growth of future market bubbles. However, this author proposes, it is the peculiar chemistry of optimism, hubris, and technology that will drive the market, with larger gaps between fundamental and paper values, increased market volume and volatility, and recurrent bubbles. In data compiled by the International Data Corporation, the number of internet users in the US will exceed 175 million by 2003 (Schiller, p. 206). The internet itself, with its immediacy of information, gives the viewer a sense of empowerment; of being on top of any investment situation, kindling investor confidence and hence support for high market valuations. The number of on-line brokerage accounts – while growing rapidly, has much further to go till the saturation point. On-line accounts numbered 3.1 million in 1999 and are projected to grow to 9 million in 2003 (Schiller). The potential for explosive growth in on-line accounts will become a reality if 1%-2% of Old Age and Survivors insurance tax (6.2% per individual) is allowed to be funneled into private accounts. On-line investing generates an exuberance of its own, boosting confidence, trading, and volatility. Internet investment and financial sites can provide the investor with encyclopedic information about a particular company or industry with a keystroke.

However, the torrent of information now available to the individual investor is not without cost. More than forty years ago, Herbert Simon identified two factors which tended to negate rationality in decision-making: (a) because of time constraints, it is not possible to consider all the information necessary to arrive at a rational

decision; and (b) there are insufficient "inner" programs to properly digest all the information, resulting in informational overload (Schwartz, 1998). In the internet age, Simon's axiom holds truer than ever; finite timeframes plus overload translate into less than rational decisions.

Thus, a critical determinant in investor psychology is over-confidence (weak case) or hubris (strong case). There are strong elements of both empowerment and the casino involved in on-line investing which are heightened by the never-diminishing waterfall of fresh information. Internet investing has become the perfect cottage industry for the 21st century: low barriers to entry, perfect information, and innumerable price-taking "firms." The irony is that more perfect information is presumed to move prices more quickly toward an inherent value. And well it might, absent hubris, frame and heuristic dependency, and investors' psyche.

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