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Behavioral Finance: Old Wine in a New Bottle

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There are dozens of academic articles on behavioral finance. The study of how human behavior affects finance effectively began with the 1979 work of Daniel Kahneman and Amos Tversky. In 1995, Benartzi and Thaler [1995] carefully examined “myopic loss aversion”—the idea that reductions in wealth are weighted in terms of current wealth much more heavily than the prospect of gains.

Since then Kahneman and Riepe [1998], Brunel [1999], Shefrin [2000], Shiller [1999], and Statman [1999]—and others too numerous to name—have added to the literature on aspects of behavioral finance. They conclude that behavioral factors affect virtually every aspect of finance, from prices of individual stocks to absolute returns and from individual retirement planning to investor confidence.

Few if any researchers, however, have discussed the way active portfolio managers have long applied behavioral finance to the investment process. We provide a brief history of behavioral finance, explain some market anomalies created as a result of human error, and detail a few ways we see that portfolio managers have used behavioral observations to manage clients’ funds for more than sixty years.

CAN ANYONE BEAT THE MARKET?

Is it possible to beat the market consistently? In the last few years, many investors

have answered with a resounding “no.” By putting their assets into index funds, they have joined the ranks of efficient market theorists who argue that every variable affecting stock prices is absorbed so rapidly by the market that it is nearly impossible to identify pricing anomalies consistently—much less profit from them—before other investors.

Indeed, the last ten years of the twentieth century could be called the decade of the efficient market. In 1990, three economists—Harry Markowitz, William Sharpe and Merton Miller—won the prestigious Nobel Prize for economics for work that provides the underpinnings of the efficient market theory.

As the 1990s progressed, investors voted with their assets, pouring money into funds that promise to do nothing more than match the market’s performance. The people had spoken: “If you can’t beat the market, join it.” The strong performance of S&P index funds in the late 1990s seemed to validate their choice.

But finance is still a young science, and the new decade may bring new ways of thinking. In fact, a new breed of economists have been busy lately poking holes in the efficient market theory. They are questioning one of the tenets of efficient markets: that investors make their decisions based on rational self-interest.

On the surface, this might seem strange: Would you make a decision not in your best interest? But the new school questions the rationality of investor decisions.

The study of behavioral finance reminds us that investors are all too human, and that we frequently make investment decisions that don't make good sense. The most dramatic example is a market panic. When people are frantically selling at any price, clearly they are not acting rationally. But behavioral finance researchers have found that investors make similar, if less dramatic, irrational decisions every day. The ramifications are huge. If behavioral finance theory is right, investors who understand the patterns of behavior have the potential to outperform the market.

Behavioral finance has become a hot topic. Books and seminars on the subject are selling at a brisk pace; some leading researchers have even launched their own money management firms to put theory into practice. Yet ironically, there may be nothing new about this theory at all.

We believe that advocates of behavioral finance are putting old wine in a new bottle. Whether one is a die-hard value investor or an aggressive growth investor—and we believe that both strategies can lead to long-term success—the phrase 'behavioral finance' captures what active money managers have tried to do for 60 years: Find anomalies in the market and capitalize upon them.

Finding the anomalies is no easy task. But, given some analytical ability and a knowledge of human behavior, investors may indeed be able to "beat the market."

PREDICTABLE ANOMALIES

Behavioral finance contends that anomalies are not random, but actually rather predictable, because they stem from fundamental aspects of human behavior. Tversky and Kahneman's [1979] prospect theory shows that reactions to potential losses or gains depend largely on the context in which investors view them. Even when the prospect of a loss makes the most economic sense, prospect theory shows that an overriding human desire to avoid losses prevails more often than not.

Tversky and Kahneman asked two sets of subjects to choose between alternative choices. The first subjects were offered a sure gain of \$500 versus a 50% chance to gain \$1,000 or a 50% chance to gain nothing. They found that 84% took the first choice—a sure gain of \$500.

They then asked a second set of subjects to choose between a sure loss of \$500 versus a 50% chance of losing \$1,000 and a 50% chance of losing nothing. Surprisingly, 69% of the subjects took the second choice. In other words, most people would prefer to avoid a sure loss, even if the alternative offers them a healthy risk of losing more!

Academic data generally indicate that investors are a little over two times as risk-averse as they are gain-seeking. This has a number of implications. One, people tend to sell their winners early, for fear of reversals. Second, particularly after bad news, people tend to overdiscount companies with less-than-glamorous prospects. Third, investors tend to overpay for a long shot.

These types of behavior are not an indication of foolishness or even poor judgment. Human beings are simply "hard-wired" to avoid pain. We also, quite naturally, make judgments about the future on the basis of recent experience, and we tend to be fairly confident in our own judgment. To act and feel otherwise is considered neurotic.

Consider this simple question: Would you rate yourself an above-average, average, or poor driver? Most people—80%, in fact—rate themselves as above-average drivers. But by definition, 80% cannot be "above average" drivers unless the remaining 20% are incredibly awful drivers.

This helps explain why, despite the high risk of 100% loss, people tend to buy lottery tickets. What is a few dollars for the chance of winning millions? "The combination of overconfidence and optimism is a potent brew, which causes people to overestimate their knowledge, underestimate risks and exaggerate their ability to control events," write Kahneman and Mark Riepe. "It also leaves them vulnerable to statistical surprises" [1998, pp. 52-65].

FROM MAIN STREET TO WALL STREET

Market professionals are just as vulnerable as individuals. In 1995, the U.S. equity market as represented by the S&P 500 returned 38%, and in 1996 it returned 23%. At the end of 1996, nearly every major Wall Street economist predicted equity returns would move back toward the historic mean. They grossly underestimated the market's actual 1997 gain of 33%.

Similarly, Fisher and Statman [2000] recently investigated the notion that the stock market's average price-to-earnings ratio provides an indication of future returns. After looking at data for 127 years, 1872 through 1998, they found that there was virtually no correlation.

So why does the perception of reliable P-E based forecasts persist? The persistence of the perception is due to cognitive errors that underlie what Kahneman and Tversky [1973] called the illusion of validity [2000, Working paper].

People experience a high level of confidence in their highly fallible judgment, creating a perceptual and judgment error that persists even when its illusory nature is recognized.

There is a tremendous disparity of potential outcomes for any of life's events—including security prices and earnings reports. Yet people tend to cluster their expectations very tightly and to project recent history into the future, falsely believing their predictions have a high degree of certainty.

Academic work supporting these points abounds. Lakonishok [1994], for example, explores market inefficiencies by examining the effect on stock prices of everything from tax-induced trading and seasonal anomalies to quarterly earnings announcements and earnings expectations. The body of academic work that demonstrates investors' irrational behavior is now so plentiful that Thaler recently noted that behavioral finance can no longer be termed controversial:

As financial economists become accustomed to thinking about the role of human behavior in driving stock prices, people will look back at the articles written in the past fifteen years and wonder what all the fuss was about [1999, pp. 12-17].

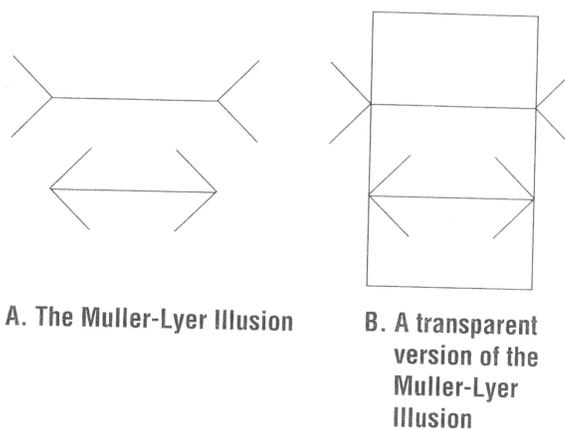
INDIVIDUALS AND INSTITUTIONS

Despite the rise of "black box" systems, humans still make most decisions in the securities markets, so the ways human behavior can affect stock prices are quite clear. There are three main constituencies in the market: individual investors, institutional investors, and corporate issuers. The study of behavioral finance shows how each group makes decisions that are not necessarily rational—and to some extent, predictable.

First, consider individual investors. Most of us need only look in the mirror to find an example of someone who makes irrational investments, but academicians have conducted dozens of studies that show just how irrational individuals can be.

Human financial decisions, the behavioral scientists tell us, are largely affected by rules that they call *heuristic driven bias*. In other words, people base their decisions on their perceptions, whether these come from anecdotal evidence, their own experience, or rules of thumb. Individual perceptions are often flawed, because of something called the "framing effect." In other words, the way in which a choice is framed influences the individual's decision-making.

EXHIBIT 1 Which Line is Longer?



Source: Tversky and Kahneman, "Rational Choice and the Framing of Decisions," *Journal of Business*, 1986.

For a simple example of the framing effect, consider the illustrations in Exhibit 1. The lines on top look clearly longer than the lines on the bottom, although all the lines are of equal length. Most intriguing are the two lines on the right. Even though the box proves that the two lines are of equal length, your eye still tries to tell you they are unequal.

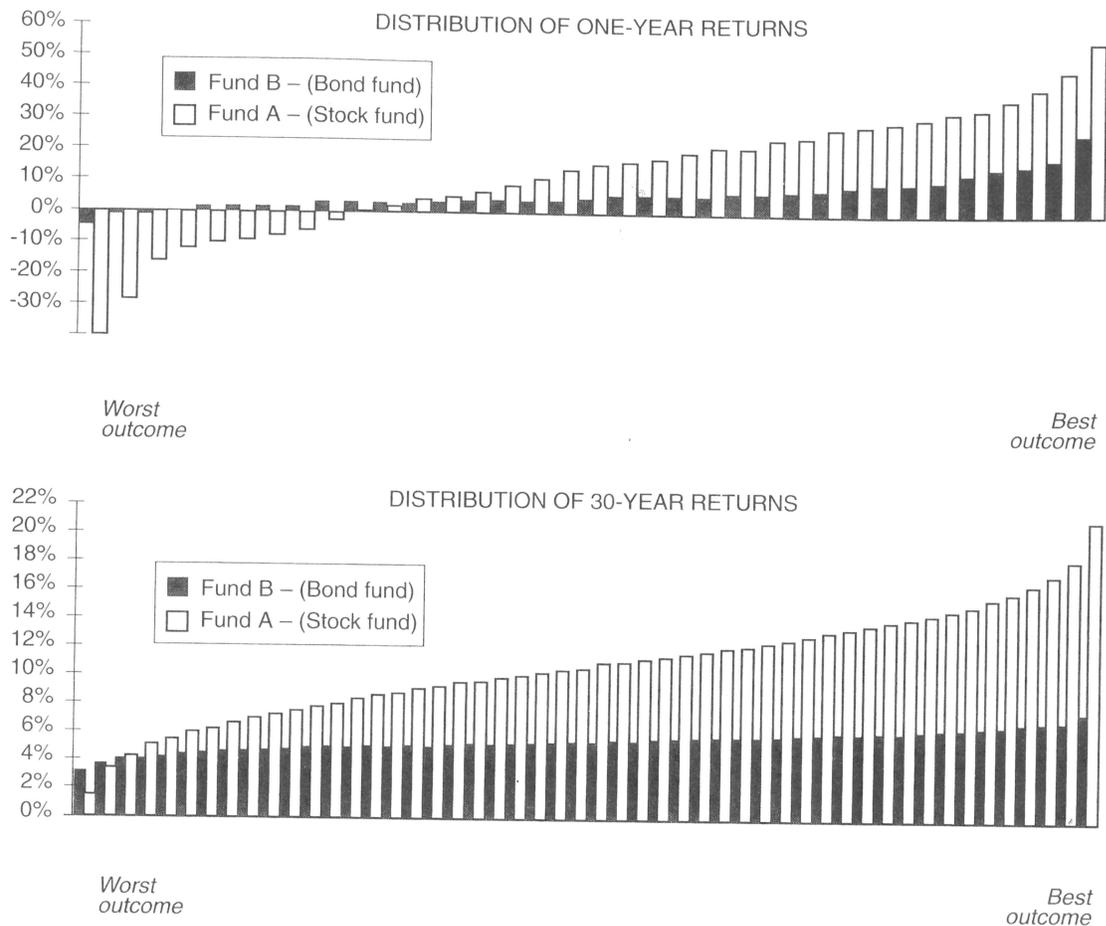
A Benartzi and Thaler [1999] study looks at the framing of investor choices. Researchers told study subjects to allocate their assets between Fund A and Fund B. While they used the designations A and B so that subjects would not have preconceived notions about asset classes, A was based on returns from the CRSP value-weighted NYSE index for stocks, and B was based on Ibbotson Associates' annual returns on five-year bonds.

The researchers showed historic returns of the two funds in several ways, including the two representations in Exhibit 2. The first graph shows a distribution of one-year rates of return based on 68 years of data. Each bar on the histogram represents an event that would be expected to take place about 3% of the time. The second graph shows the distribution of 30-year returns, divided into 50 segments, and each bar shows 2% of the possible outcomes.

The results indicate that people allocated their defined-contribution plans between stocks and bonds, depending largely on which historical information they saw. Those shown 30 one-year returns invested a median 40% of their funds in stocks; those shown 30-year total returns invested 90% of their funds in stocks.

EXHIBIT 2

What a Difference the Frame Makes



Source: Sholmo Benartzi and Thaler.

Fund A was constructed from the historical returns on the NYSE value-weighted index and Fund B was constructed from the historical returns on 5-year bonds. The study assumed that the historical returns on stocks and bonds are representative of future returns. Researchers told study subjects to allocate their assets between Fund A and Fund B. Researchers used the terms A and B so that subjects would not have preconceived notions about asset classes. A, however, was based on returns from the CRSP value-weighted NYSE index for stocks, and B was based on Ibbotson Associate's annual returns on five-year bonds. The researchers showed historic returns of the two funds in several ways, including the two charts shown above. The top chart shows a distribution of one-year rates of return based on 68 years of data. Each bar on the histogram represented an event that would be expected to take place about 3% of the time. The lower chart showed the distribution of 30-year returns, divided into 50 segments, with each bar showing 2% of the possible outcomes.

One might expect institutional investors—trained professionals, often working in groups and supported by all sorts of resources—to be more rational than individuals. They're supposed to be the "smart money." Think again.

In *Beyond Fear and Greed*, Shefrin [1999] borrows a stockbroker's label—"get-evenitis"—for the human aversion to realizing losses. In other words, selling makes

unpalatable losses real, so investors tend to hang on to losing positions, in the hope that their position will eventually turn around and make them even. Even professional investors fall prey to this syndrome. In 1992, Barings trader Nicholas Leeson sank the 232-year-old investment banking firm with \$1.4 billion worth of bad trades, as he desperately tried to get even.

ANALYSTS AND ISSUERS

Security analysts may be just as prone to basic behavioral foibles. Their predictions of corporate earnings are chronically high. Analysts' bottom-up estimates at the beginning of the year tend to be much higher, for many companies, than the economic environment will allow, or than they deliver. It is common to see bottom-up estimates of earnings growth for specific companies at 20%, when top-down economic strategists expect overall 10% earnings growth. This is a function of aggregate underlying individual optimism.

Analysts also tend to watch each other's estimates very carefully, adjusting their own accordingly, whether consciously or unconsciously. First Call earnings estimates, especially for large growth companies, are generally clustered within 3 cents of one another. Security analysts are not compensated for being outliers.

Investors and analysts aren't the only human beings who affect stock prices. Issuers of stocks and bonds create their own market anomalies too. The practice of "managing earnings" is probably the most blatant example.

It is well-documented that corporate executives may attempt to present earnings in the most favorable light. Since executive compensation is often tied to earnings growth or company stock price, it is in managers' interest that their companies' announced earnings be seen to march steadily upward.

"Managers have considerable discretion in determining the figure printed in the earnings report for any particular period," note DeGeorge, Patel, and Zeckhauser [1997, Working paper], who label this earnings manipulation.

They identify three motivations that drive earnings manipulation: the avoidance of red ink, the hope that a previous period's earnings will operate as a benchmark, and seeing market forecasts as levels to be met, missed, or exceeded.

There is psychic satisfaction in meeting expectations for Wall Street, so being an achiever is reinforced at a corporate management level, which encourages earnings management, which also leads to higher multiples. When companies miss earnings estimates, executives may manage earnings again, by taking a big write-off to set up the next quarter or year for a big positive earnings surprise.

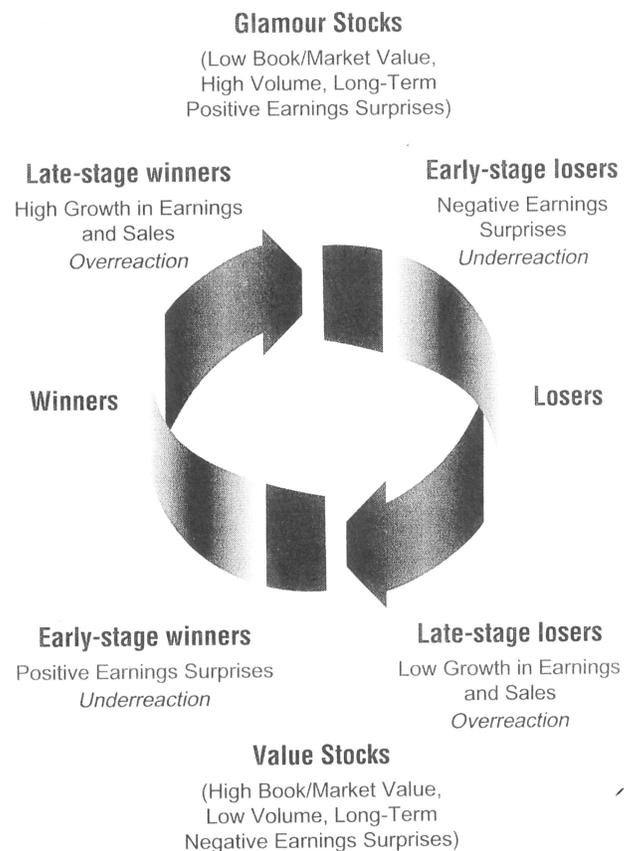
Understanding the patterns and motivations behind this behavior can help smart investors analyze stocks.

USING BEHAVIORAL FINANCE TO INVEST SMARTER

Both value and growth investors can use behavioral finance to their benefit. For example, some value investors saw opportunity in 1998, when the energy market was under severe pressure. Oil prices had fallen to \$10 a barrel, and all Wall Street analysts were negative on oil stocks. Some suggested that oil prices might fall another 20%. Prices went up threefold instead.

Business history tells us that energy prices tend to revert to the mean. Human behavior was driving the market in 1998, but a rational analysis suggested prices would soon turn. When oil prices fall too low, companies cut capital expenditures and production falls. Also, low prices tend to rise because oil is a depleting asset and, over time, supply grows slower than demand.

EXHIBIT 3 The Momentum Life Cycle



Source: Swaminathan and Lee

Growth investors can also use behavioral finance to their advantage. Many studies show the impact of human behavior on the formation of prices for growth stocks. "Overall, our evidence suggests a price formation process in which the market systematically underreacts to recent news and overreacts to longer-term (older) news," according to Swaminathan and Lee [2000].

Using such behavioral underreaction to positive news, investors can zero in on the serial correlation in upward earnings revision announcements. Our research shows that companies that have positive earnings and even revenue surprises tend to have them again.

Now recall that for behavioral reasons, analysts' earnings estimates tend to be clustered together. The values that follow those surprises are generally not anticipated in the market.

On the flip side, growth investors should look at companies that fall short of earnings expectations. Companies that underperform their estimates are apt to do so again—with investors digesting the news only gradually.

CONCLUSION

Human nature is universal, and constant. Both individual and institutional investors are human—and therefore are subject to fear (loss aversion), greed (self-interested trend-following), and a host of other behavioral characteristics. These quirks cause pricing anomalies in the marketplace, and an astute money manager can exploit these anomalies.

Of course, human foibles affect us all, even astute money managers. Steering one's own course, in opposition to the crowd, is never easy. It is even tougher when the market seems to be swept away with irrational behavior. But a thorough understanding of behavioral finance can lead to better performance in the long term.

ENDNOTE

This is the work of the authors, and should not be taken to represent the views of their employer.

REFERENCES

Benartzi, Shlomo and Richard Thaler. "Myopic Loss Aversion and the Equity Premium Puzzle." *Quarterly Journal of Economics*, February 1995, pp. 73-92.

———. "Risk Aversion or Myopia." *Management Science*, April 1999.

Jean L.P. Brunel. "A Second Look at Absolute Return Strategies." *The Journal of Private Portfolio Management*, Vol. 1, No. 1 (Spring 1998), pp. 67-78.

DeGeorge, Francois, Jayendu Patel, and Richard Zeckhauser. "Earnings Manipulation to Exceed Thresholds." Working paper, Harvard University, February 15, 1997.

Fisher, Ken, and Meir Statman. "Cognitive Biases in Market Forecasts." Working paper, Santa Clara University, January 2000.

Kahneman, Daniel, and Mark Riepe. "Aspects of Investor Psychology." *The Journal of Portfolio Management*, Vol. 24, No. 4 (Summer 1998), pp. 52-65.

Lakonishok, Josef, Andrei Shleifer, Robert Vishny. "Contrarian Investment, Exploration and Risk" *Journal of Finance*, Vol. 49, No. 5 (December 1994), pp. 1541-1548.

Shefrin, Hersh. *Beyond Fear and Greed: Understanding Behavioral Finance and the Psychology of Investing*. MA:Harvard Business School, (2000).

———. "Recent Developments in Behavioral Finance." *The Journal of Private Portfolio Management*, Vol. 3, No. 1 (Summer 2000), pp. 25-37.

Shiller, Robert. "Measuring Bubble Expectations and Investor Confidence." Cowles Foundation Discussion Paper 1212, Yale University, 1999.

Statman, Meir. "Investor Sentiment and Stock Returns." *The Journal of Private Portfolio Management*, Vol. 2, No. 2 (Fall 1999), pp. 11-13.

Swaminathan, Bhaskaran, and Charles M.C. Lee. "Do Stock Prices Overreact to Earnings News?" Working paper, Johnson Graduate School of Management, January 2000.

Thaler, Richard. "The End of Behavioral Finance." *Financial Analysts' Journal*, (November/December 1999), pp. 12-17.

Tversky, Amos, and Daniel Kahneman. "Prospect Theory: An Analysis of Decision Under Risk." *Econometrica*, 49 (1979), pp. 263-291.

Barron's, December 30, 1996.