research+insight

A well-thought-out investment plan includes establishing goals, implementing a strategy and monitoring your portfolio. This section offers ideas, insights, lists and tools from Schwab and third-party experts to help you create and maintain a diversified portfolio, including:

- **Financial Perspective:** Greg Forsythe provides his views on a stock- or investor-related topic
- **Investment Insight:** John Eade of Argus Research Co. provides commentary and the latest Argus Model Portfolios
- **The Mutual Fund OneSource Select List:** This is a quarterly list of funds, plus analysis and commentary, from the Schwab Center for Financial Research.

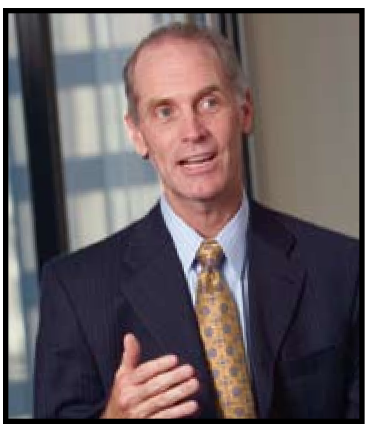
Schwab Equity Ratings® (SER) is a tool for evaluating individual stocks, and powers many of our proprietary mutual funds and managed accounts. Updated weekly, the SER lists can be found at **schwab.com/schwabstocklists**.

For more information about mutual funds that participate in the Mutual Fund OneSource® Service, please refer to "Additional Important Information" on page 47.

>> For the most current Schwab research, please go to **schwab.com** and click on "Research & Strategies."

FINANCIAL PERSPECTIVE

Neurofinance: How Biology Affects Investor Decisions



GREG FORSYTHE, CFA, senior vice president, Schwab Equity Ratings®

In a recent survey, only 35% of investors said that emotions influenced their investment decisions. But recent brain scanning research reveals that emotions are actively triggered in decisions involving risk and reward, indicating a lack of self-awareness that may prevent investors from reaching their financial goals.

Are we irrational?

Economists have long assumed that people are rational. For example, given the same risk preferences, investment capital and information, economists would expect any two investors to make the same choice. But in actual testing, psychologists have found that people often make different choices than pure logic would dictate. In the financial world, behavioral researchers are beginning to see consistent patterns in investor reaction to information that some professionals (like me) argue could be the foundation for market-beating investment strategies. But behavioral finance doesn't explain why people often make suboptimal decisions. Now a new field called "neurofinance"—which adds biology to the mix of economics and psychology—is providing some answers. Using tools such as Magnetic Resonance Imaging (MRI) scanners, scientists are able to see what

CHRISTOPHER STEVENSON (TOP); STEVE LEONARD portions of the brain are active under various circumstances.

The man with two brains

Scientists have found that humans basically have two brains. Our limbic system or inner brain, which controls greed and fear, is similar to that of other mammals. For example, we instinctively seek sources of pleasure like food and steer away from sources of danger like the edge of a cliff. By contrast, our prefrontal cortex or outer brain controls our uniquely human ability to organize information, compute probabilities and plan for the future. Jason Zweig in his excellent book, *Your Money and Your Brain*, calls these two brain functions the reflexive system and the reflective system.

One would assume that the outer, reflective brain would be in heavy use when making investment decisions, but that's not how our brains actually work. It is estimated that 20% to 25% of our caloric intake is needed simply to keep our brains running. Because conscious thinking requires effort, to conserve energy we avoid engaging our reflective brain whenever possible. As a result, our reflexive brain is always the first to assess a situation or process information. While efficient for basic survival, the reflexive brain can cause problems in the investment setting.

Anticipation of reward

A chemical called dopamine is released in our inner brain when we anticipate receiving essential rewards like food. Unfortunately, bad behaviors such as drug and gambling addictions are also stimulated in the same way. When scientists examined the brains of people making investment-like decisions, they expected to see heavy neural activity in the outer reflective brain. Instead, their scans revealed brain activity similar to an addict about to get a hit

of cocaine! Evidently, anticipation of financial reward triggers the same emotional responses as food, sex and drugs. No wonder we ignore probability and are lured into buying stocks touted as the next Microsoft or Google. And the thrill of a large unexpected gain is so intense that we keep coming back for more—which helps explain why nearly all lottery winners keep buying tickets.

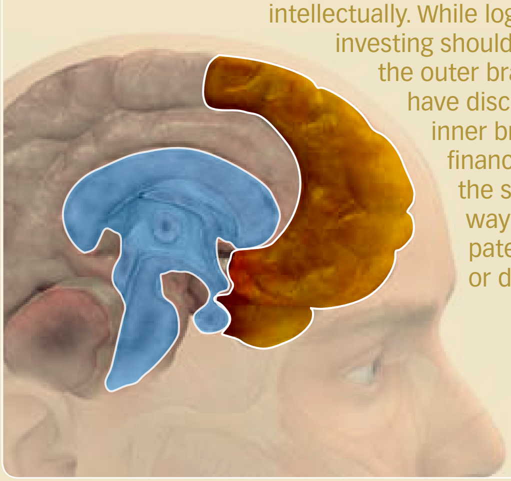
Risk aversion

While our inner brain loves rewards, it dislikes uncertainty and hates losses. Like most animals, humans tend to choose small, certain rewards over intermittent, larger rewards. Consistency promotes feelings of comfort in an uncertain world, which explains why stocks with stable earnings growth tend to have higher P/E multiples and why companies like to pay steady dividends over time.

When potential losses get bigger or consequences more extreme, risk perceptions intensify to feelings of fear. Your inner brain takes over in such situations—without thinking, you swerve your car to avoid an accident. Investing is hardly a life or

Our Reflexive/Reflective Brains

Our inner brain (in blue) reacts instinctively and emotionally while our outer brain (in yellow) processes information intellectually. While logic dictates that investing should mostly engage the outer brain, scientists have discovered that the inner brain anticipates financial rewards in the same emotional way that it anticipates food, sex or drugs.



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death endeavor, but brain scans reveal that losing money, or even believing that you might, triggers similar fear reactions in our inner brain. Furthermore, the emotional response to losing money is about three times as intense as the pleasure generated by monetary gain. The reflexive brain is what drives investors to "sell now, ask questions later" in reaction to bad news.

Sensitivity to change

Our ability to easily recognize what's normal and predictable enables us to mentally relax under ordinary circumstances. But that adaptability stems from our brains being highly reactive to anything that appears new or unfamiliar. We instinctively assess whether a change represents a reward opportunity or a potential risk threat. The reflexive brain is at work when you focus on the worst performing stock in your portfolio rather than on your entire portfolio's valuation or why it's more alarming to hear that the Dow dropped 300 points today than to hear that the index moved to 8,500 from 8,800.

The right balance

So are we being irrational when we seek reward, avoid risk or are overly sensitive to change? Of course not—we're just being human! The challenge is to make sure we don't overreact or focus on the wrong thing. The first step is to recognize that investment decisions will activate your inner, reflexive, emotional brain. But to be a successful investor, you need to bring your outer, reflective brain into play as a counterbalance. In the next issue, we'll discuss how. ■

Greg Forsythe

The information here is for general informational purposes only and should not be considered an individualized recommendation, a personalized investment strategy or advice. Each investor needs to review an investment strategy for his or her own particular situation before making any investment decision.

INVESTMENT INSIGHT

Focus on Financial Strength

JOHN M. EADE, president and director of research, Argus Research Co., talks about the importance of assessing a company's financial strength when picking stocks.

The financial and economic crises have made debt financing difficult to obtain for most companies outside the triple-A credit rating sphere of Johnson & Johnson, Automatic Data Processing and Berkshire Hathaway. Even General Electric is now facing tough questions from lenders.

As investors review their portfolios and consider adding new stocks at deeply discounted values, they should pay close attention to each company's financial strength, focusing on the companies that are less reliant on credit and may not need to tap the public debt markets.

At Argus, we have developed a proprietary financial strength ranking system that allows investors to understand, at a glance, whether a company has a clean balance sheet or may be in need of a financial overhaul. Our ratings are available in our Analyst Reports.

For stocks we don't cover, here is a simple, three-part test investors can run themselves.

1. Measure a company's debt to total capitalization. This information is available on the balance sheet. A debt/cap ratio of below 20% correlates with a high Argus Financial Strength rating, while a ratio above 60% generally suggests a low rating.

J M Eade

GIL VAKNIN