

# BEHAVIORAL FINANCE

People invest to make money. Though their motivations - a bigger house, a better education for their children or a better retirement for themselves - may differ, their objectives do not.

Many great minds have examined the financial markets in hopes of finding investment strategies that yield the best results. And nearly all have based their theories on one assumption - that investors always act in a manner that maximizes their returns. Yet volumes of research show that investors aren't always so rational.

Psychological studies, for example, have repeatedly demonstrated that the pain of losing money from investments is nearly three times greater than the joy of earning money. Small market corrections have often disintegrated into full-scale crashes as a result, fueled by panicked investors who made rash decisions to avoid losing money in the short-term rather than focusing on an investment's long-term potential.

Clearly, not every choice investors make is in their best interests. While emotions such as fear and greed often play a pivotal role in poor decisions, there are other causes of irrational behavior. Common mental mistakes sometimes lead people to incorrectly process new information about a company and, in turn, misjudge a stock's true value.

Behavioral Finance is the study of how these emotions and mental errors can cause stocks and bonds to be

overvalued or undervalued. It has led to the creation of investment strategies that capitalize on this irrational investor behavior.

While investment strategies that exploit emotions have existed for centuries, the newest and most promising area of Behavioral Finance focuses on identifying mental mistakes regularly made by investors. These strategies do more than just examine the fundamentals of companies or the feelings of investors. They incorporate how the brain solves problems and, in certain instances, might be most prone to making a mistake.

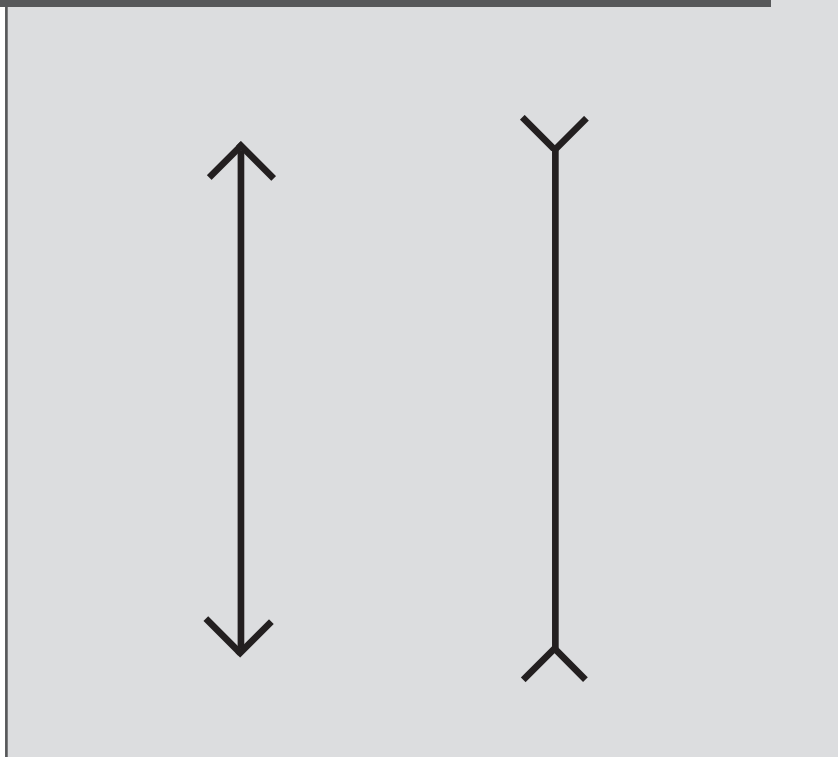
## **MENTAL SHORTCUTS - POWERFUL BUT IMPERFECT TOOLS USED BY THE BRAIN**

Psychological research has shown that the human brain often uses shortcuts to solve complex problems. Rather than fully digesting all information before producing an exact answer, the brain sometimes uses tools to quickly generate an estimate. These estimates, however, aren't always accurate.

Optical illusions are good examples of how the use of shortcuts can lead to mental mistakes. Vision is a very complex problem that requires the brain to process colors, depths and shapes. A set of tools enables the brain to make rapid estimates so that people do not collide with objects around them. While these estimates are usually accurate, there are occasions when these tools cause the brain to incorrectly

### Optical Illusions and Mental Shortcuts

Which of the straight-line segments appears to be longer?



process information and produce an optical illusion.

The picture to the left is a good example of how shortcuts can cause the brain to be tricked. Although the lines are identical in length, the line on the right appears to be longer because the brain uses a shortcut that leads it to believe it is solving a three-dimensional problem. The brain is tricked into believing that the line on the right is farther away. And in a three-dimensional problem, items that are farther away appear longer than items that are closer.

#### **MENTAL MISTAKES CAN ALSO CAUSE ERRORS IN THE FINANCIAL MARKETS**

Vision is not the only complex problem that the brain solves by using shortcuts. Studies in Behavioral Finance have shown that the brain has similar tools for processing financial data and producing esti-

mates when making investment decisions. And, similar to optical illusions, there are certain instances when these tools can cause mistakes.

The primary mental mistakes made by investors are overreacting or underreacting to new information about a company. Research has shown that the longer investors have studied a company, the harder it is for them to quickly evaluate new data and properly adjust their view because their brains rely on shortcuts to make decisions.

#### **REPRESENTATIVENESS - ONE TOOL THAT CAUSES OVERREACTION**

There are dozens of mental shortcuts that make it hard for investors to correctly analyze new information. One example is representativeness, a tool that the brain uses to classify things rapidly. The brain assumes that items - plants, people, stocks, etc. - with a few similar traits are likely to be identical even though they may be quite different in reality. While representativeness helps the brain organize and quickly process large amounts of data, it is a shortcut that can cause investors overreact to old information.

The following test shows how easy it is for anyone to make a mistake because of representativeness.

## Representativeness

### A Brief Quiz

You are given the following information:

**Mary is quiet, studious, and very concerned with social issues. While an undergraduate at Berkeley, she majored in English Literature and Environmental Studies.**

**Given this information, indicate which of the following three cases is most probable:**

- A. Mary is a librarian**
- B. Mary is a librarian and a member of the Sierra Club**
- C. Mary works in the banking industry**

The best answer is "C" (Mary works in the banking industry). There are so many more people employed by banks than by libraries that it is far more likely someone is a banker than a librarian. If you chose answer "A" (Mary is a librarian) your brain is probably making a "representativeness" mistake. You have assumed that because Mary demonstrates a few traits of librarians (quiet and studious), she is one. In reality, it is statistically much more likely that she is a banker.

The worst and most common answer is "B" (Mary is a librarian and a member of the Sierra Club). This is a pure error in probabilities because the joint probability of being both a librarian and a member of the Sierra Club has to be smaller than the simple probability of being a librarian.

Representativeness can also cause investors to make errors in financial markets. For example, if a company has repeatedly delivered poor results, investors will sometimes become disillusioned with it. In their minds, the company has the traits of a lousy company and, like most lousy companies, it will continue to deliver poor results in the future. Investors in these instances overreact to the past, negative information and ignore valid signs of improvement. Although it may be poised to deliver good results, the company is overlooked and its stock undervalued.

This is not to say investors won't ever change their view. If the company continues its improvement over time, investors will eventually overcome their representativeness error. And the company will start to look like a potentially attractive investment.

### **ANCHORING - A TOOL THAT CAUSES UNDERREACTION**

Mental mistakes can also cause investors to underreact to new, positive information about a company. One shortcut that causes this is anchoring - a tool the brain uses to solve complex problems by selecting an initial reference point and slowly adjusting to the correct answer as it receives additional information.

## Case Study: Representativeness

### **Fingerhut Companies, Inc.**

Fingerhut was trading at approximately \$30 a share in 1994 before embarking on a two-year slide that dropped its stock price into the mid-teens. Despite an economic boom, sales and margins for the mail-order catalog company decreased. And the company became known in the investment community as one to avoid.

In early 1999, however, the company announced it was developing an on-line trading department that could potentially expand its audience and boost its earnings by several times. Company insiders, including a senior vice-president and four directors, started buying stock. Increased sales and other fundamental signals of improvement also started to appear.

But the company's stock price did not rise much initially despite the new information. Investors overreacted to the old information and remained convinced that the company would continue to perform poorly, much like it had over the past two years - creating an opportunity for rational investors to exploit the market's bias against the stock. Between July 1996 and April 1999, the stock rose from \$15 to \$25. The company also spun off Metris Companies, Inc. during this period, adding an additional \$18 per share to shareholder return. The company was acquired in April 1999 by Federated Department Stores, Inc.

## Case Study: Anchoring

### Jabil Circuit, Inc.

The movement of Jabil Circuit's stock price is an excellent example of investors being anchored and only slowly adjusting their expectations of future performance over time. The electronic outsourcing company was trading at approximately \$7 in June 1996 when it lost a substantial account with Quantum Corporation. The company more than made up for this loss by attracting other clients, however, and surprised the market by reporting a more than 300-percent increase in earnings over the previous year.

But the company's stock price rose only slightly at first. Even though the company reported significant increases in sales and margins and operating income, the market underreacted to the new information. Most investors were convinced the company couldn't possibly sustain its increase in earnings.

However, Jabil Circuit continued to report significantly higher earnings over the next year, and as investors became less anchored to their view of the company, its stock rose dramatically. By October 1997, it traded for \$60 per share on a split-adjusted basis.

Bargaining is a good example of how anchoring works. A well-trained car salesman negotiates with potential customers by starting at a high price and slowly reducing the price over time. His goal is to anchor the customer to the high price (regardless of the actual value of the car) and let the customer feel he negotiated a good deal by getting a lower price.

Anchoring also can cause securities to be mispriced. For example, should a company suddenly report substantially higher earnings, the market will on occasion underreact to this change. Although the company is making more money, its stock price does not rise because investors assume that the change in earnings is only temporary. They remain anchored to their previous view of the company's potential profitability because they have underreacted to the new, positive information.

This does not mean that investors will never move away from their initial reference point, or anchor. Similar to representativeness, as investors get better information about the company over time, they will eventually overcome mental mistakes caused by anchoring. They will realize that the company is likely to continue to be more profitable in the future and that its stock is probably an attractive potential investment.

### **THE GOAL OF BEHAVIORAL FINANCE STRATEGIES - TO INVEST BEFORE INVESTORS RECOGNIZE THEIR MISTAKES**

Behavioral Finance seeks to identify market conditions in which investors are likely to overreact or underreact to new information. These mistakes can cause mispriced securities. And the goal of Behavioral Finance strategies is to invest in these securities before most investors recognize their error - and to benefit from the subsequent jump in price once they do.

### **BEHAVIORAL FINANCE INVESTMENT STRATEGIES - MORE SUSTAINABLE IN THE LONG RUN?**

A particularly attractive feature of Behavioral Finance investment strategies is that they have an advantage over most traditional approaches to investing. Most investors use information-based strategies. They try to generate good returns by acquiring better information about companies or by processing information better than their peers through a unique, quantitative (black box) strategy.

But gaining advantages through these methods is becoming increasingly difficult. A combination of the Internet and the increasing power of microprocessors is making information more readily available and easier to process for all investors.

Behavioral Finance strategies, however, take advantage of human behavior - and human behavior changes very slowly. The brain has evolved over centuries. Its approach to solving complex problems, and the tools it uses to solve them, are unlikely to change in the near future. And Behavioral Finance investors will be waiting to take advantage when mistakes are made.