BIAS #2

REPRESENTATIVENESS

BIAS DESCRIPTION

In order to derive meaning from life experiences, people have developed an innate propensity for classifying objects and thoughts.

This perceptual framework provides an expedient tool for processing new information by simultaneously incorporating insights gained from past experiences.

It endows people with a quick response reflex that helps them to survive.

So, what is the Problem?

BIAS DESCRIPTION

Sometimes, however, new stimuli resemble—are representative of—familiar elements that have already been classified. In reality, these are drastically different analogues. In such an instance, the classification reflex leads to deception, producing an incorrect under standing of the new element.

Similarly, people tend to perceive probabilities and odds that resonate with their own preexisting ideas—even when the resulting conclusions drawn are statistically invalid. For example, the "**Gambler's Fallacy**" (impression that gambling luck runs in streaks)

Humans also tend to subscribe to something researchers call **"the law of small numbers**," (the assumption that small samples faithfully represent entire populations).

BIAS DESCRIPTION

- Base-Rate Neglect
  - Contextualizing the situation in a familiar, easy-to-understand classification scheme.
  - Such an investor might categorize Company A as a “value stock” and draw conclusions about the risks and rewards that follow from that categorization.
  - Some investors tend to rely on stereotypes when making investment decisions.

- Sample-Size Neglect
  - They incorrectly assume that small sample sizes are representative of populations (or “real” data).
  - Researchers call this phenomenon the “**law of small numbers**”

PRACTICAL APPLICATION

Case Study # 1: Base-Rate Neglect

GEORGE: Hi, Harry. My portfolio is really suffering right now. I could use a good long-term investment. Any ideas?

HARRY: Well, George, did you hear about the new IPO [initial public offering] pharmaceutical company called PharmaGrowth (PG)? PG is a hot new company that should be a great investment. Its president and CEO was a mover and shaker at an Internet company that did great during the tech boom, and she has PharmaGrowth growing by leaps and bounds.

GEORGE: No, I didn’t hear about it. Tell me more.

HARRY: Well, the company markets a generic drug sold over the Internet for people with a stomach condition that millions of people have. PG offers online advice on digestion and stomach health, and several Wall Street firms have issued “buy” ratings on the stock.

GEORGE: Wow, sounds like a great investment!

HARRY: Well, I bought some. I think it could do great.

GEORGE: I’ll buy some, too.

PRACTICAL APPLICATION

- Base-rate neglect representativeness bias
  - IPO is, necessarily, representative of a good long-term investment
- Investors in hot IPOs usually make money in the first few days after the offering
- In fact, numerous studies have shown that a very low percentage of IPOs actually turn out to be good long-term investments.
- George ignores the statistics and probabilities

PRACTICAL APPLICATION

- What is the probability that person A (Simon, a shy, introverted man) belongs to Group B (stamp collectors) rather than Group C (BMW drivers)?

- In answering this question, most people typically evaluate the degree to which A (Simon) “represents” B or C; they might conclude that Simon’s shyness seems to be more representative of stamp collectors than BMW drivers.

- This approach neglects base rates, however: Statistically, far more people drive BMWs than collect stamps.

PRACTICAL APPLICATION

- Similarly, George, our hypothetical investor, has effectively been asked: What is the probability that Company A (PharmaGrowth, the hot IPO) belongs to Group B (stocks constituting successful long-term investments) rather than Group C (stocks that will fail as long-term investments)?

- In George's judgment, PG possesses the properties of a successful long-term investment rather than a failed one. Investors arriving at this conclusion, however, ignore the base-rate fact that IPOs are more likely to fail than to succeed.

PRACTICAL APPLICATION

Case Study # 2: Sample-Size Neglect

GEORGE: Hi, Jim, how are you?

JIM: Hi, George. I’m doing great! I’ve been doing superbly in the market recently.

GEORGE: Really? What’s your secret?

JIM: Well, my broker has passed along some great picks made by an analyst at her firm.

GEORGE: Wow, how many of these tips have you gotten?

JIM: My broker gave me three great stock picks over the past month or so. Each stock is up now, by over 10 percent.

GEORGE: That’s a great record. My broker seems to give me one bad pick for every good one. It sounds like I need to talk to your broker; she has a much better record!

BIAS DESCRIPTION

Sample size neglect representativeness bias

- George is impressed, but his assessment is based on a very small sample size; the recent, successful picks.
- Jim cites are inevitably only part of the story.
- If he were to ask more questions, he might discover that his conclusion draws on too small a sample size.
- In reality, the analyst that Jim is relying on happens to be one who covers an industry that is popular at the moment, and every stock that this analyst covers has enjoyed recent success.
- Additionally, Jim neglected to mention that last year, this same broker/analyst team made a string of three losing recommendations. Therefore, both Jim’s and George’s brokers are batting 50 percent.

IMPLICATIONS FOR INVESTORS

THE HARMFUL EFFECTS OF SAMPLE-SIZE NEGLECT

1.Investors can make significant financial errors when they examine a money manager’s track record. They peruse the past few quarters or even years and conclude, based on inadequate statistical data, that the fund’s performance is the result of skilled allocation and/or security selection.

2.Investors also make similar mistakes when investigating track records of stock analysts. For example, they look at the success of an analyst’s past few recommendations, erroneously assessing the analyst’s aptitude based on this limited data sample.

IMPLICATIONS FOR INVESTORS

A. *What is the probability that Company A (ABC, a 75-year-old steel manufacturer that is having some business difficulties) belongs to group B (value stocks that will likely recover) rather than to Group C (companies that will go out of business)?*

In answering this question, most investors will try to judge the degree to which A is representative of B or C. In this case, some headlines featuring recent bankruptcies by steel companies make ABC Steel appear more representative of the latter categorization, and some investors conclude that they had best unload the stock. They are ignoring, however, the base-rate reality that far more steel companies survive or get acquired than go out of business.

IMPLICATIONS FOR INVESTORS

B. *What is the probability that AAA-rated Municipal Bond A (issued by an "inner city" and racially divided county) belongs to Group B (risky municipal bonds) rather than to Group C (safe municipal bonds)?*

In answering this question, most investors will again try to evaluate the extent to which A seems representative of B or C. In this case, Bond A's characteristics may seem representative of Group A (risky bonds) because of the county's "unsafe" reputation; however, this conclusion ignores the base-rate fact that, historically, the default rate of AAA bonds is virtually zero.

RESEARCH REVIEW

Daniel Kahneman, Paul Slovic, and Amos Tversky

- Judgment under Uncertainty: Heuristics and Biases
- Abstract: A game of squash can be played either to nine or to fifteen points. If you think you are a better player than your opponent, then which game—the shorter version, or lengthier version—provides you a higher probability of winning?
- Intuitively, victory over an opponent in either a nine-point or fifteen-point match would strike many people as equally representative of one's aptitude at squash.
- This is an example of sample-size neglect bias.
- Answer is

RESEARCH REVIEW

- The larger the sample of rounds the greater likelihood of achieving the expected outcome.
- So, if you believe you are the stronger player, then you should prefer the longer game.
- The concept of permitting the game “to go longer” in order to increase the probability that the stronger player wins can also apply to investing,
- It is called time diversification,

RESEARCH REVIEW

- Time diversification,
  - Investors should spread their assets across ventures operating according to a variety of market cycles, giving their allocations plenty of time to work properly.
  - Time diversification helps reduce the risk that an investor will be caught entering or abandoning a particular investment or category at a disadvantageous point in the economic cycle.
  - It is particularly relevant with regard to highly volatile investments
  - Holding onto these assets for longer periods of time can soften the effects of such fluctuations.
  - Time diversification also comes into play when investing or withdrawing large sums of money from a specified niche within an allocation. In general, it is best to move these amounts gradually over time, rather than all at once, to reduce risk.

ADVICE

- The five best-performing funds from 1994 to 2003 were analyzed. The results of the study were surprising to say the least:
  - Only 16 % of the top five funds make it to the following year's list.
  - The top five funds average 15% lower returns the following year.
  - The top five funds barely beat (by 0.3%) the market the following year.
  - Of the top five funds, 21% ceased to exist within the following 10 years.

ADVICE

- Quantitative Analysis of Investor Behavior – DALBAR (2003)
  - Investors tend to buy into a fund immediately following a rapid price appreciation. These points in time also, cyclically, tend to shortly precede a subsequent decline in the fund’s performance.
  - When prices then fall, investors quickly dump their holdings and search for the next hot fund.
- The average equity investor earned 2.57% average annual return over the period 1984 through 2002.
  - Compare that to a 3.14 percent inflation rate
  - 12.22 % return from the Standard & Poor’s 500.
  - Not only did mutual fund clients fail to keep up with the market, but they actually underperformed it—and lost money to inflation.

ADVICE

- Investors ignore the statistically dominant result
- There are prudent methods for identifying appropriate long-term investments.
  - Use an asset allocation strategy to guarantee balance and to increase long-term returns among all your investments.
  - Invest in a diversified portfolio and stick with it.

ADVICE

These four questions should help you to avoid the futility of chasing returns and to select appropriate, ultimately beneficial investments.

1. How does the fund that you are considering perform relative to similarly sized and similarly styled funds?
2. What is the tenure of the managers and advisors at the fund?
3. Are the managers well known and/or highly regarded?
4. Do the fund’s 3, 5, and 10 year returns all exceed market averages