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Behavioral Biases

What is Behavioral Finance?

Behavioral finance studies the psychology of actual individual financial decision making versus the traditional theory of individual behavior which tries to explain how markets and individuals should behave based on certain assumptions. One of the main pillars of traditional financial theory is the assumption that individuals are "rational" and that their financial decisions are well-informed, consistent and profit maximizing. As a result, traditional theory holds that investors are not confused by how financial information is presented to them and they are not swayed by their own emotions in making financial decisions. In reality, the observation of actual behavior dramatically departs from the behavior theorized by traditional finance.

The behavioral finance model for individual behavior posits that individual behavior is "normal" and that individuals frequently make "irrational" decisions and that nobody has the ability as a human to make perfectly rational decisions all of the time. Behavioral researchers have taken the view that financial theory and modeling should take into account actual behavior, not just the traditional viewpoint. As a result, research from psychology has been incorporated to better understand actual human behavior. With a better understanding of how individuals make decisions and what common issues or biases they might have in making decisions, better financial outcomes could be achieved by either correcting for them or acknowledging them up front.

But first, let's review traditional financial theory and its recently perceived shortcomings.

Background on Traditional Financial Theory and Modern Portfolio Theory

Traditional financial theory builds upon the assumption that individuals are perfectly rational with a number of other key assumptions:

- Investors are not only rational, but are also risk-averse
- Investor expectations are homogeneous
- Investors have complete and accurate information at their disposal
- Investors aim to maximize their economic utility
- Investors are broadly diversified across a range of investments
- Investors are price takers and cannot influence asset prices
- Investors can lend and borrow at the risk-free rate of interest
- Investors trade without transaction or tax costs
- All assets are divisible and liquid

Based on these assumptions, a number of models have been developed over the past seventy years to attempt to explain and predict the behavior and performance of markets. These models are referred to collectively as "Modern Portfolio Theory". The "Efficient Market Hypothesis", developed by Eugene Fama, builds on the

"rational" individual by asserting that the markets are perfectly efficient and as a result it is impossible to "beat" the market. From there, Harry Markowitz developed the concept of the "Efficient Frontier" which provides the framework to improve portfolios by identifying optimal asset returns in a portfolio for a given level of risk. As a result of Markowitz's work, the "Capital Asset Pricing Model" or CAPM, was developed to determine the appropriate price for an asset or portfolio based on the premise that investors prefer lower risk for a given return or higher return for a given risk.

Issues with Modern Portfolio Theory

Modern Portfolio Theory and CAPM were generally widely accepted and utilized by market participants from the late 1960s through most of the 1990s although empirical studies in the 1990s started to pose questions about the validity of the Efficient Market Hypothesis and CAPM due to observed anomalies in stock prices and in the stock market. In a 2004 study by Fama and French, they asserted that CAPM failed in empirical tests and they questioned whether most applications of the model are valid. In addition, in an article in the Wall Street Journal, Fama admitted that stocks prices could become "somewhat irrational". Some of the observed anomalies include the fact that small and neglected stocks, as well as many value stocks, perform better than can be explained by CAPM. Fama and French developed an asset pricing model that expanded on CAPM by adding size risk and value risk to CAPM's market risk as a better way of explaining stock price movement. In addition, other anomalies that have occurred include manias like the technology market bubble in 2000 and the housing market bubble that burst in 2008.

Of course these anomalies could not exist if investors were behaving perfectly rationally. As a result of these observed anomalies that could not be explained by Modern Portfolio Theory, Behavioral Finance became better accepted and much more academic research has been conducted. In fact, behavioral biases have been studied extensively and have been classified into two overall types of biases.

At the heart of Behavioral Finance, if one accepts that individuals are not perfectly rational, then individuals are likely influenced by two types of biases: cognitive biases and emotional biases. Both biases could negatively affect financial decisions. Cognitive biases are those based on faulty cognitive reasoning while emotional biases are those based on reasoning that is influenced by feelings or emotions. Cognitive errors stem from statistical, information processing or memory errors which can lead to faulty reasoning while emotional biases stem from impulse or intuition which can also impact financial decision making.

Cognitive Biases

Cognitive biases can be classified into two broad categories. The first category is the "belief perseverance" bias which is the tendency to cling to one's previously held beliefs despite all evidence to the contrary. It is tied to the idea of cognitive dissonance, or the mental discomfort that one feels when new information conflicts with previously held beliefs. To resolve this discomfort, people tend to notice only information that interests them, ignore information that conflicts with their beliefs and/or remember and consider only information that confirms existing beliefs.

Here are brief descriptions of the six observed "belief perseverance" biases:

Cognitive Dissonance Bias

- Newly acquired information conflicts with pre-existing beliefs
    - Results in believing "This time is different"
    - May cause someone to continue to buy a losing investment

Conservatism Bias

- Opt to maintain prior beliefs rather than deal with the mental stress of updating beliefs given complex data

Confirmation Bias

- Being drawn to information that tells us what we want to hear
    - Can result in over-concentration in an investment
    - Particularly problematic in today's world of 24-hour news channels

Representativeness Bias

- Treat properties reflected in small sample size as representative of universal pool
    - Broker gave one great stock pick, but now you believe this is representative of all his stock picks
- Periodic table of investments used to counteract this bias

Illusion of Control Bias

- People tend to believe they can control or influence outcomes when, in fact, they cannot
    - Investors may trade more than is prudent or hold inadequately diversified portfolios
    - Air travel is statistically safer than car travel; however, some feel safer in a car due to their illusion of control

Hindsight Bias

- Overestimate the degree to which they predicted an investment outcome, thus giving them a false sense of confidence
- May cause investors to unfairly assess money managers or security performance

The second category of cognitive biases has to do with "information processing errors" and describes how information may be processed and used illogically or irrationally. Here are the seven observed "information processing error" biases:

Anchoring and Adjustment Bias

- Reference point is not fully adjusted when new information is incorporated, and thus can lead to surprises

Mental Accounting Bias

- Viewing some sources of money as being different from others
    - May be frugal with money saved from wages while being frivolous with an inheritance
    - Irrationally distinguish between dividends and capital appreciation

Framing Bias

- A person answers a question differently based on the way in which it is asked (framed)
    - Misidentify risk tolerance because of how questions about risk tolerance were framed

Availability Bias

- People take a heuristic approach to estimating the probability of an outcome based on how easily the outcome comes to mind.
    - Choose an investment, investment adviser, or mutual fund based on advertising rather than on thorough analysis
    - Fail to diversify or achieve an appropriate asset allocation because of a narrow range of experience

Self-Attribution Bias

- Tendency to ascribe success with talent and foresight while blaming failures on bad luck
- Remember, "Don't confuse brains with a bull market"

Outcome Bias

- Tendency to decide to do something based on the outcome of past events rather than observing the process by which the outcome came about

Recency Bias

- Believing what is happening now will continue for the foreseeable future

Emotional Biases

Emotions are related to feelings, perceptions or even beliefs that arise spontaneously rather than through conscious effort and may result in involuntary physical manifestations. For many, these emotions may not be desired, and while they might wish to control these emotions and the responses to them, they are "hard wired" so it is next to impossible to do so. As a result, emotional biases are even more difficult than cognitive biases to overcome. Here are brief descriptions of the eight emotional biases:

Loss Aversion Bias

- Losses hurt more than gains feel good
- May limit capital appreciation of a portfolio by selling winners and holding losers

Myopic Loss Aversion Bias

- Investors that monitor performance too frequently tend to become more conservative

Overconfidence Bias

- Unwarranted faith in one's reasoning, judgements and cognitive abilities which can lead to excessive risk taking

Self-Control Bias

- People fail to act in pursuit of their long-term, overarching goals because of a lack of self-discipline
    - Save insufficiently for the future
    - Accept too much risk in their portfolios in an attempt to generate higher returns to make up for inadequate savings

Status Quo Bias

- People do nothing instead of making a change. People are generally more comfortable keeping things the same than with change and thus do not necessarily look for opportunities where change is beneficial

Endowment Bias

- People value an asset more when they hold rights to it than when they do not

Regret-Aversion Bias

- People tend to avoid making decisions that will result in action out of fear that the decision will turn out poorly.
    - Engage in herding behavior. Investors may feel safer in popular investments in order to limit potential future regret

Affinity Bias

- Tendency to make irrationally uneconomic choices based on how they believe a certain product or service will reflect their values

Quantifying the Cost of Cognitive and Emotional Biases

What are the costs to investors of the cognitive and emotional biases outlined above? It is extremely hard to quantify as individuals exhibit varying degrees of these biases. However, Dalbar, a well-respected company that provides investment research to institutional clients such as retirement plans and endowment plans, has published data showing how average investors have experienced returns that are lower than the investments they hold, which is a good proxy to quantify how investor biases have negatively impacted their returns. In a 2016 published study, they found that over the previous twenty years ending in 2015, the average stock fund returned roughly 8.2% annualized, while the average stock fund holder only collected a 4.7% return. For bond funds, the results were similar as the average bond fund earned roughly 5.3% annually, while the average bond fund holder earned just 0.5% annually. Similarly, the average asset allocation fund earned roughly 6.8%

annualized, while the average asset allocation fund holder earned only 2.1% annually during the same period. Clearly, investors have earned far less than the funds they were invested in, likely due to these biases that influenced their investment decisions.

How to improve?

Ultimately, to enhance returns, investors need to commit fewer of these biases in order to make better long-term investment decisions. First, acknowledging and understanding that these biases exist is a good first step. From there, investor education is important so that individuals have a clearer understanding of what these biases are, when they come into play and how to adjust to them. For cognitive biases, it is widely accepted that slowing down decision-making can be effective so that one has time to understand how one's beliefs or information processing is affecting decision-making. Careful analysis might be enough to understand the cognitive biases to overcome them. Emotional biases are obviously more difficult to overcome as these are not conscious decisions that people make and are more intuitive and involuntary. While difficult to overcome, slowing down decision-making and acknowledging that emotions do come into play, might be an effective way to turn decision-making from a purely emotional response to one in which conscious decision-making comes into play. Another potentially effective strategy is to adjust for the emotional bias versus trying to overcome it.

In addition, many investors might also benefit from working with a financial professional as a way of overcoming these biases. By collaborating with a knowledgeable third-party investment professional, important discussions can occur when these biases come into play. These discussions can help transform potential impulses into more rational decision-making, thereby helping to improve long-term returns and achieve long-term financial goals.