READING 8: THE BEHAVIORAL BIASES OF INDIVIDUALS

Introduction

Individuals strive to make good decisions by simplifying the choices available, using a subset of the information available, and discarding some possible alternatives to choose among a smaller number. They are content to accept a solution that is “good enough” rather than attempting to find the optimal answer. In doing so, they may unintentionally bias the decision-making process. These biases may lead to irrational behaviors and decisions.

By understanding behavioral biases, investment professionals may be able to improve economic outcomes.

A- Categorizations of Behavioral Biases

The simple categorization of distinguishing between biases based on faulty cognitive reasoning (cognitive errors) and those based on reasoning influenced by feelings or emotions (emotional biases) is used in this reading.

Cognitive errors stem from basic statistical, information-processing, or memory errors; cognitive errors may be considered the result of faulty reasoning. Emotional biases stem from impulse or intuition; emotional biases may be considered to result from reasoning influenced by feelings. Behavioral biases, regardless of their source, may cause decisions to deviate from the assumed rational.

1- Differences between Cognitive Errors and Emotional Biases

Cognitive errors are more easily corrected than emotional biases. Individuals are better able to adapt their behaviors or modify their processes if the source of the bias is logically identifiable, even if not completely understood. Cognitive errors can also be thought of as “blind spots” or distortions in the human mind. Cognitive errors do not result from emotional or intellectual predispositions toward certain judgments, but rather from subconscious mental procedures for processing information. Because cognitive errors stem from faulty reasoning, better information, education, and advice can often correct for them.

Because emotional biases stem from impulse or intuition—especially personal and sometimes unreasoned judgments—they are less easily corrected. It is generally agreed that an emotion is a mental state that arises spontaneously rather than through conscious effort. Emotions are related to feelings, perceptions, or beliefs about elements, objects, or relations between them and can be a function of reality or the imagination. Emotions may be undesired to the individual feeling them; he or she may wish to control them but often cannot. Thus, it may only be possible to recognize an emotional bias and “adapt” to it. When a bias is adapted to, it is accepted and decisions are made that recognize and adjust for it (rather than making an attempt to reduce or eliminate it).
B- Cognitive Errors

Nine specific cognitive errors are reviewed, their implications for financial decision making, and suggestions for correcting for them. We classify cognitive errors into two categories. The first category contains “belief perseverance” biases. In general, belief perseverance is the tendency to cling to one’s previously held beliefs irrationally or illogically. The belief continues to be held and justified by committing statistical, information-processing, or memory errors. A second category of cognitive error has to do with “processing errors,” describing how information may be processed and used illogically or irrationally in financial decision making.

1- Belief Perseverance Biases

Belief perseverance biases are closely related to the psychological concept of cognitive dissonance. Cognitive dissonance is the mental discomfort that occurs when new information conflicts with previously held beliefs or cognitions.

a. Conservatism Bias

Conservatism bias is a belief perseverance bias in which people maintain their prior views or forecasts by inadequately incorporating new information.

This bias has aspects of both statistical and information-processing errors. Academic studies have demonstrated that conservatism causes individuals to overweight initial beliefs about probabilities and outcomes and under-react to new information; they fail to modify their beliefs and actions to the extent rationally justified by the new information.

As a result of conservatism bias, FMPs may underreact to or fail to act on new information and continue to maintain beliefs close to those based on previous estimates and information.

i. Consequences of Conservatism Bias

- Maintain or be slow to update a view or a forecast, even when presented with new information.
- Opt to maintain a prior belief rather than deal with the mental stress of updating beliefs given complex data. This behavior relates to an underlying difficulty in processing new information.

ii. Detection of and Guidance for Overcoming Conservatism Bias

The effect of conservatism bias may be corrected for or reduced by properly analyzing and weighting new information.

Hirshleifer (2001) provides evidence that the processing of new information and the updating of beliefs are inversely correlated with the effort involved in processing the information and updating the beliefs. He terms this effort cognitive cost. The higher the cognitive cost, the less likely information will be processed and beliefs updated. Information that is abstract and statistical is cognitively costly, and it thus receives less weighting. As a result, the base rate is overweighted. Information that is cognitively inexpensive (easily processed) may receive a higher weighting. As a result, individuals may overreact to
information that is easily processed and may even underweight base rates. The costly processing idea can explain base rate overweighing and underweighting.

When an appropriate course of action becomes clear, even if it deviates from the course of action based on previous information and beliefs, it should be implemented without hesitation.

b. Confirmation Bias

Confirmation bias is a belief perseverance bias in which people tend to look for and notice what confirms their beliefs, and to ignore or undervalue what contradicts their beliefs. This behavior has aspects of selective exposure, perception, and retention and may be thought of as a selection bias.

i. Consequences of Confirmation Bias

As a result of confirmation bias, FMPs may do the following:

- Consider only the positive information about an existing investment and ignore any negative information about the investment.
- Develop screening criteria and ignore information that either refutes the validity of the screening criteria or supports other screening criteria.
- Under-diversify portfolios, leading to excessive exposure to risk.
- Hold a disproportionate amount of their investment assets in their employing company’s stock because they believe in their company and are convinced of its favorable prospects.

ii. Detection of and Guidance for Overcoming Confirmation Bias

- The effect of confirmation bias may be corrected for or reduced by actively seeking out information that challenges your beliefs.
- Another useful step is to get corroborating support for an investment decision.

c. Representativeness Bias

Representativeness bias is a belief perseverance bias in which people tend to classify new information based on past experiences and classifications. When confronted with new information, they use those categories even if the new information does not necessarily fit. They rely on a “best fit” approximation to determine which category should provide a frame of reference from which to understand the new information.

Base-rate neglect and sample-size neglect are two types of representativeness bias that apply to FMPs:

Base-Rate Neglect. In base-rate neglect, the base rate or probability of the categorization is not adequately considered. To rephrase this error, some FMPs rely on stereotypes when making investment decisions without adequately incorporating the base probability of the stereotype occurring.

Sample-Size Neglect. A second type of representativeness bias is sample-size neglect. In sample-size neglect, FMPs incorrectly assume that small sample sizes are representative of populations (or “real” data).
i. Consequences of Representativeness Bias
As a result of representativeness bias, FMPs may do the following:

- Adopt a view or a forecast based almost exclusively on new information or a small sample.
- Update beliefs using simple classifications rather than deal with the mental stress of updating beliefs given complex data. This issue relates to an underlying difficulty (cognitive cost) in properly processing new information.

ii. Detection of and Guidance on Overcoming Representativeness Bias
In both base-rate neglect and sample size neglect, investors ignore the laws of probability to satisfy their need for patterns. FMPs need to be aware of statistical mistakes they may be making and constantly ask themselves if they are overlooking the reality of the investment situation being considered.

d. Illusion of Control Bias
Illusion of control bias is a bias in which people tend to believe that they can control or influence outcomes when, in fact, they cannot. Langer finds that choices, task familiarity, competition, and active involvement can all inflate confidence and generate such illusions.

i. Consequences of Illusion of Control
As a result of illusion of control bias, FMPs may do the following:

- Trade more than is prudent.
- Lead investors to inadequately diversify portfolios.

ii. Detection of and Guidelines for Overcoming Illusion of Control Bias
There are some useful guidelines to help investors detect and overcome illusion of control bias.

- The first step on the road to understanding illusion of control bias is to be aware that global capitalism is highly complex, and even the most powerful investors have little control over the outcomes of the investments they make.
- Second, it is advisable to seek contrary viewpoints.
- Finally, it is critical to keep records.
e. Hindsight Bias

Hindsight bias is a bias with selective perception and retention aspects. People may see past events as having been predictable and reasonable to expect.

i. Consequences of Hindsight Bias

As a result of hindsight bias, FMPs may do the following:

- Overestimate the degree to which they predicted an investment outcome, thus giving them a false sense of confidence.
- Cause FMPs to unfairly assess money manager or security performance. Based on their ability to look back at what has taken place in securities markets, performance is compared against what has happened as opposed to expectations.

ii. Detection of and Guidelines for Overcoming Hindsight Bias

Once understood, hindsight bias should be recognizable.

- Achieving success with investments requires investors to recognize and come to terms with mistakes. This approach is contrary to human nature. However, understanding how markets work and why investments go wrong is critical to achieving investment success.
- To guard against hindsight bias, FMPs need to carefully record and examine their investment decisions, both good and bad, to avoid repeating past investment mistakes. In addition, FMPs should constantly remind themselves that markets move in cycles and that good managers stay true to their strategies through good times and bad.

2. Information-Processing Biases

Information-processing biases result in information being processed and used illogically or irrationally. As opposed to belief perseverance biases, these are less related to errors of memory or in assigning and updating probabilities and more to do with how information is processed.

a. Anchoring and Adjustment Bias

Anchoring and adjustment bias is an information-processing bias in which the use of a psychological heuristic influences the way people estimate probabilities. When required to estimate a value with unknown magnitude, people generally begin by envisioning some initial default number—an “anchor”—which they then adjust up or down to reflect subsequent information and analysis. Regardless of how the initial anchor was chosen, people tend to adjust their anchors insufficiently and produce end approximations that are, consequently, biased. This bias is closely related to the conservatism bias.

i. Consequences of Anchoring and Adjustment Bias

As a result of anchoring and adjustment bias, FMPs may stick too closely to their original estimates when new information is learned.
ii. Detection of and Guidelines for Overcoming Anchoring and Adjustment Bias

The primary action FMPs can take is to consciously ask questions that may reveal an anchoring and adjustment bias.

b. Mental Accounting Bias

Mental accounting bias is an information-processing bias in which people treat one sum of money differently from another equal-sized sum based on which mental account the money is assigned to.

i. Consequences of Mental Accounting Bias

A potentially serious problem that mental accounting creates is the placement of investments into discrete “buckets” without regard for the correlations among these assets. As a result of mental accounting bias, FMPs may do the following:

- **Neglect opportunities to reduce risk by combining assets with low correlations.** Inefficient investing may result from offsetting positions in the various layers. This approach can lead to suboptimal aggregate portfolio performance.
- **Irrationally distinguish between returns derived from income and those derived from capital appreciation.** Although many people feel the need to preserve capital appreciation (principal), they focus on the idea of spending income that the principal generates. As a result, many FMPs chase income streams, unwittingly eroding principal in the process.

ii. Detection of and Guidelines for Overcoming Mental Accounting Bias

An effective way to detect and overcome mental accounting behavior that causes investors to place money in discrete investment “buckets” is to **recognize the drawbacks of engaging in this behavior.** The primary drawback is that correlations between investments are not taken into account when creating an overall portfolio.

- FMPs should go through the exercise of combining all of their assets onto one spreadsheet or other summary document to see the true asset allocation of various mental account holdings.
- The logical next step would be to create a portfolio strategy taking all assets into consideration.

**With regard to the income versus total return issue,** an effective way to manage the tendency of some FMPs to treat investment income and capital appreciation differently is to focus on total return. FMPs should learn the benefits of integrating the two sources of return, allocating sufficient assets to lower income investments to allow principal to continue to grow even after inflation.
c. Framing Bias

Framing bias is an information-processing bias in which a person answers a question differently based on the way in which it is asked (framed). A framing effect results in a change of preferences between options as a function of the variation of frames, perhaps through variation of the formulation of the decision context.

Narrow framing occurs when people evaluate the information to make a decision based on a narrow frame of reference. People lose sight of the big picture and focus on one or two specific points.

i. Consequences of Framing Bias

FMPs’ willingness to accept risk can be influenced by how situations are presented or framed. As a result of framing bias, FMPs may do the following:

- **Misidentify risk tolerances** because of how questions about risk tolerance were framed; may become more risk-averse when presented with a gain frame of reference and more risk-seeking when presented with a loss frame of reference. This may result in suboptimal portfolios.
- **Choose suboptimal investments**, even with properly identified risk tolerances, based on how information about the specific investments is framed.
- **Focus on short-term price fluctuations**, which may result in excessive trading.

ii. Detection of and Guidelines for Overcoming Framing Bias

- When making decisions, FMPs should **try to eliminate any reference to gains and losses already incurred**; instead, they should focus on the future prospects of an investment.
- Regarding susceptibility to the positive and negative presentation of information, investors should try to be as neutral and open-minded as possible when interpreting investment-related situations.

d. Availability Bias

Availability bias is an information-processing bias in which people take a heuristic (sometimes called a rule of thumb or a mental shortcut) approach to estimating the probability of an outcome based on how easily the outcome comes to mind. Easily recalled outcomes are often perceived as being more likely than those that are harder to recall or understand. The basic problem is that there are biases in our memories. For instance, recent events are much more easily remembered and available.

There are various sources of availability bias. The four most applicable to FMPs:

- **Retrievability.** If an answer or idea comes to mind more quickly than another answer or idea, the first answer or idea will likely be chosen as correct even if it is not the reality.
- **Categorization.** When solving problems, people gather information from what they perceive as relevant search sets.
• **Narrow Range of Experience.** This bias occurs when a person with a narrow range of experience uses too narrow a frame of reference based upon that experience when making an estimate.

• **Resonance.** People are often biased by how closely a situation parallels their own personal situation.

The critical aspect is not to be able to identify the specific source of bias (as they overlap), but rather to know the sources of bias in order to detect and overcome the availability bias.

**i. Consequences of Availability Bias**

As a result of availability bias, FMPs may do the following:

• **Choose** an investment, investment adviser, or mutual **fund based on advertising** rather than on a thorough analysis of the options. Choices based on advertising are consistent with retrievability as a source of availability bias.

• **Limit their investment opportunity set.** This may be because they use familiar classification schemes. They may restrict investments to stocks and bonds of one country or may fail to consider alternative investments when appropriate.

• **Fail to diversify.** This may be because they make their choices based on a narrow range of experience. For example, an investor who works for a fast-growing company in a particular industry may overweight investments in that industry.

• **Fail to achieve an appropriate asset allocation.** This consequence may occur because they invest in companies that match their own personal likes and dislikes without properly taking into account risk and return.

**ii. Detection of and Guidelines for Overcoming Availability Bias**

To overcome availability bias, investors need to **develop an appropriate investment policy strategy, carefully research and analyze investment decisions before making them, and focus on long-term results.**

**3- Cognitive Errors: Conclusion**

Individuals are less likely to make cognitive errors if they remain vigilant to the possibility of their occurrence. A **systematic process to describe problems and objectives; to gather, record, and synthesize information; to document decisions and the reasoning behind them; and to compare the actual outcomes with expected results** will help reduce cognitive errors.

**C- Emotional Biases**

Emotions may be undesired to the individuals feeling them; although they may wish to control the emotion and their response to it, they often cannot. Emotional biases are harder to correct for than cognitive errors because they originate from impulse or intuition rather than conscious calculations. In the case of emotional biases, it may only be possible to recognize the bias and adapt to it rather than correct for it.
1- Loss-Aversion Bias

In prospect theory, loss-aversion bias is a bias in which people tend to strongly prefer avoiding losses as opposed to achieving gains. When comparing absolute values, the utility derived from a gain is much lower than the utility given up with an equivalent loss.

Rational FMPs should accept more risk to increase gains, not to mitigate losses. However, paradoxically, FMPs tend to accept more risk to avoid losses than to achieve gains. Kahneman and Tversky describe loss-averse investor behavior as the evaluation of gains and losses based on a reference point. An important concept embedded in this utility representation is the disposition effect: the holding (not selling) of investments that have experienced losses (losers) too long, and the selling (not holding) of investments that have experienced gains (winners) too quickly. The resulting portfolio may be riskier than the optimal portfolio based on the risk/return objectives of the investor.

Consequences of Loss Aversion As a result of loss-aversion bias, FMPs may do the following:

- **Hold investments in a loss position longer than justified** by fundamental analysis. FMPs hold losing investments in the hope that they will return to break even.
- **Sell investments in a gain position earlier** than justified by fundamental analysis. FMPs sell winning investments because they fear that their profit will erode.
- **Limit the upside potential of a portfolio by selling winners and holding losers.**
- **Trade excessively** as a result of selling winners. Excessive trading has been shown to lower investment returns.
- **Hold riskier portfolios than is acceptable based on the risk/return objectives** of the FMP.

Further, framing and loss-aversion biases may affect the FMP simultaneously, and is a potentially dangerous combination. When people have suffered losses, they may view risky alternatives as a source of opportunity; when people have gained, they may view choices involving additional risk as a threat.

A caveat to this basic principle is that once money is made through a profitable trade, some investors may view the profit differently from other money and decide to engage in additional risky behavior with it. Richard H. Thaler of the University of Chicago refers to this as the “house money effect,” which is based on the willingness of gamblers to engage in increasingly risky gambles with previous winnings. The gamblers view themselves as risking someone else’s money; in the case of the gambler, it is the casino or house’s money they view as at risk.

**Myopic loss aversion:** Investors presented with annual return data for stocks and bonds tend to adopt more conservative strategies (lower allocation to equities) than those presented with longer-term return data, such as 30-year compound returns. **Investors place stocks and bonds into separate mental accounts rather than thinking of them together in a portfolio context;** they seem to be more concerned with the potential for short-term losses than with planning for the relevant time horizon and focusing on long-term results. Benartzi and Thaler use the term myopic loss aversion in reference to this behavior. This combines aspects of time horizon-based framing, mental accounting, and loss-aversion
biases. The overemphasis on short-term losses results in a higher than theoretically justified equity risk premium.

### i. Detection of and Guidelines for Overcoming Loss Aversion

A disciplined approach to investment based on fundamental analysis is a good way to alleviate the impact of the loss-aversion bias. It is impossible to make experiencing losses any less painful emotionally, but analyzing investments and realistically considering the probabilities of future losses and gains may help guide the FMP to a rational decision.

### 2- Overconfidence Bias

Overconfidence bias is a bias in which people demonstrate unwarranted faith in their own intuitive reasoning, judgments, and/or cognitive abilities. This overconfidence may be the result of overestimating knowledge levels, abilities, and access to information. This view is sometimes referred to as the illusion of knowledge bias. Overconfidence may be intensified when combined with self-attribution bias.

**Self-attribution bias** is a bias in which people take credit for successes and assign responsibility for failures. In other words, success is attributed to the individual's skill, while failures are attributed to external factors. Illusion of knowledge and self-attribution biases contribute to the overconfidence bias.

It is difficult to correct for because it is difficult for people to revise self-perceptions of their knowledge and abilities.

There are two basic types of overconfidence bias rooted in the illusion of knowledge:

- **Prediction overconfidence** occurs when the confidence intervals that FMPs assign to their investment predictions are too narrow. As a result of underestimating risks, particularly downside risks, FMPs may hold poorly diversified portfolios.

- **Certainty overconfidence** occurs when the probabilities that FMPs assign to outcomes are too high because they are too certain of their judgments. This certainty is often an emotional response rather than a cognitive evaluation.

**Self-attribution bias** is the tendency of individuals to ascribe their successes to innate personal traits, such as talent or foresight, while blaming failures on exogenous factors, such as bad luck. It can be broken down into two subsidiary biases:

- **Self-enhancing bias** describes people’s propensity to claim too much credit for their successes.
- **Self-protecting bias** describes the denial of personal responsibility for failures. The need for self-esteem affects the attribution of task outcomes; people protect themselves psychologically as they attempt to comprehend their successes and failures.

### i. Consequences of Overconfidence Bias

As a result of overconfidence bias, FMPs may do the following:
• Underestimate risks and overestimate expected returns.
• Hold poorly diversified portfolios.
• Trade excessively
• Experience lower returns than those of the market.

ii. Detection of and Guidelines for Overcoming Overconfidence Bias

FMPs should review their trading records, identify the winners and losers, and calculate portfolio performance over at least two years.

A conscious review process will force them to acknowledge their losers, because a review of trading activity will demonstrate not only the winners but also the losers. This review will also identify the amount of trading.

Because overconfidence is also a cognitive error, more complete information can often help FMPs understand the error of their ways.

3- Self-Control Bias

Self-control bias is a bias in which people fail to act in pursuit of their long-term, overarching goals because of a lack of self-discipline. There is an inherent conflict between short-term satisfaction and achievement of some long-term goals.

When it comes to money, people may know they need to save for retirement, but they often have difficulty sacrificing present consumption because of a lack of self-control. The apparent lack of self-control may also be a function of hyperbolic discounting.

Hyperbolic discounting is the human tendency to prefer small payoffs now compared to larger payoffs in the future.

i. Consequences of Self-Control Bias

As a result of self-control bias, FMPs may do the following:

• Save insufficiently for the future. Upon realizing that their savings are insufficient, FMPs may do the following:
• Accept too much risk in their portfolios in an attempt to generate higher returns. In this attempt to make up for less than adequate savings, the capital base is put at risk.
• Cause asset allocation imbalance problems.

ii. Detection of and Guidelines for Overcoming Self-Control Bias

People have a strong desire to consume today, which can be counterproductive to attaining long-term financial goals. FMPs should ensure that a proper investment plan is in place and should have a personal budget. Investing without planning is like building without a blueprint. Planning is the key to attaining long-term financial goals; plans need to be in writing, so that they can be reviewed regularly. Failing to plan is planning to fail.
4- **Status Quo Bias**

Status quo bias, is an emotional bias in which 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.

Status quo bias is often discussed in tandem with endowment and regret-aversion biases because the outcome of the biases, maintaining existing positions, may be similar. However, the reasons for maintaining the existing positions differ among the biases.

In the status quo bias, the positions are maintained largely because of inertia rather than conscious choice. In the endowment and regret-aversion biases, the positions are maintained because of conscious, but possibly incorrect, choices.

### i. Consequences of Status Quo Bias

As a result of status quo bias, FMPs may do the following:

- Unknowingly maintain portfolios with risk characteristics that are inappropriate for their circumstances.
- Fail to explore other opportunities.

### ii. Detection of and Guidelines for Overcoming Status Quo Bias

Status quo bias may be exceptionally strong and difficult to overcome. Education is essential. FMPs should quantify the risk-reducing and return-enhancing advantages of diversification and proper asset allocation.

5- **Endowment Bias**

Endowment bias is an emotional bias in which people value an asset more when they hold rights to it than when they do not. Endowment bias is inconsistent with standard economic theory, which asserts that the price a person is willing to pay for a good should equal the price at which that person would be willing to sell the same good.

### i. Consequences of Endowment Bias

As is the case with status quo bias, endowment bias may lead FMPs to do the following:

- **Fail to sell off certain assets** and replace them with other assets.
- **Maintain an inappropriate asset allocation.** The portfolio may be inappropriate for investors’ levels of risk tolerance and financial goals.
- **Continue to hold classes of assets with which they are familiar.** Familiarity adds to owners’ perceived value of a security.

### ii. Detection of and Guidelines for Overcoming Endowment Bias

Inherited securities are often the cause of endowment bias. In the case of inherited investments, an FMP should ask such a question as, “If an equivalent sum to the value of the investments inherited had been received in cash, how would you invest the cash?”
When financial goals are in jeopardy, emotional attachment must be moderated; it cannot be accepted and adapted to. An effective way to address a desire for familiarity, when that desire contradicts good financial sense, is to review the historical performance and risk of the unfamiliar securities in question and contemplate the reasoning underlying the recommendation. Rather than replacing all familiar holdings with new, intimidating ones, start with a small purchase of the unfamiliar investments until a comfort level with them is achieved.

6- Regret-Aversion Bias

Regret-aversion bias is an emotional bias in which people tend to avoid making decisions that will result in action out of fear that the decision will turn out poorly. Simply put, people try to avoid the pain of regret associated with bad decisions.

Regret aversion can also keep FMPs out of a market that has recently generated sharp losses or gains. Regret bias can have two dimensions: actions that people take and actions that people could have taken. More formally, regret from an action taken is called an error of commission, whereas regret from an action not taken is called an error of omission. Regret is more intense when the unfavorable outcomes are the result of an error of commission versus an error of omission. Thus, no action becomes the preferred decision.

In order to avoid the burden of responsibility, regret aversion can encourage FMPs to invest in a similar fashion and in the same stocks as others. This herding behavior alleviates some of the burden of responsibility.

i. Consequences of Regret-Aversion Bias

As a result of regret-aversion bias, FMPs may do the following:

- Be too conservative in their investment choices as a result of poor outcomes on risky investments in the past. This behavior can lead to long-term underperformance and potential failure to reach investment goals.
- Engage in herding behavior.

ii. Detection of and Guidelines for Overcoming Regret-Aversion Bias

In overcoming regret-aversion bias, education is essential. FMPs should quantify the risk-reducing and return-enhancing advantages of diversification and proper asset allocation. Regret aversion can cause some FMPs to invest too conservatively or too riskily depending on the current trends. With proper diversification, FMPs will accept the appropriate level of risk in their portfolios depending, of course, on return objectives.

7- Emotional Biases: Conclusion

Emotional biases stem from impulse, intuition, and feelings and may result in personal and unreasoned decisions. When possible, focusing on cognitive aspects of the biases may be more effective than trying to alter an emotional response. Also, educating about the investment decision-making process
and portfolio theory can be helpful in moving the decision making from an emotional basis to a
cognitive basis.

D- Investment Policy and Asset Allocation

Behavioral finance considerations may have their own place in the constraints section of the
investment policy statement along with liquidity, time horizon, taxes, legal and regulatory
environment, and unique circumstances.

A variety of approaches exist to incorporate behavioral finance considerations into an investment policy
statement and portfolio—including the use of a **goals-based investing approach that is consistent with
loss aversion (prospect theory) and mental accounting**. Goals-based investing involves identifying an
investor’s specific goals and the risk tolerance associated with each goal.

A goals-based investing approach matches many investors’ natural desire to put money in separate
mental accounts and to focus on loss as a measure of risk.

![Exhibit 4 Goals-Based Investing Approach](image)

Investments are chosen considering each goal individually. Thus, a **portfolio is constructed in layers**
rather than using the holistic approach to portfolio construction of modern portfolio theory (MPT). In
goals-based investing, a **portfolio is evaluated in terms of attaining financial goals and risk
management focuses on the size and likelihood of potential losses**. Investors are assumed to be **loss
averse, not risk averse**. Typically, investors will end up having a diversified portfolio using this approach,
but the resulting portfolio may not be efficient from a traditional finance perspective. The lack of
efficiency is because the **components of the portfolio are individually justified rather than based on**
modern portfolio theory that considers correlations between investments. However, risk may be better understood by the investor using this methodology. As a result, investors may find it easier to adhere to investment decisions and portfolio allocations made using this approach.

1- *Behaviorally Modified Asset Allocation*

An investor’s interest may be better served by the adoption of an asset allocation that suits the investor’s natural psychological preferences—and it may not be one that maximizes expected return for a given level of risk.

In creating a modified portfolio, it is critical to distinguish between emotional and cognitive biases and to consider the level of wealth of the investor in question. Individual biases should primarily be assessed for the purpose of identifying which type of biases dominate (cognitive or emotional) and what actions should be taken in response to observed behaviors while considering the investor’s overall wealth level. The basic actions are to adapt to a bias or to moderate the impact of the bias.

- When a bias is adapted to, it is accepted and decisions are made that recognize and adjust for the bias rather than making an attempt to reduce the impact of the bias. The resulting portfolio represents an alteration of the rational portfolio; the alteration responds to the investor’s biases while considering financial goals and level of wealth.
- To moderate the impact of a bias is to recognize the bias and to attempt to reduce or even eliminate the bias within the individual rather than to accept the bias. The resulting portfolio is similar to the rational portfolio, and a program is adopted to reduce or eliminate the investor’s biases.

   a. Guidelines for Determining a Behaviorally Modified Asset Allocation


**Guideline I:** The decision to moderate or adapt to a client’s behavioral biases during the asset allocation process depends fundamentally on the client’s level of wealth. Specifically, the wealthier the client, the more the practitioner should adapt to the client’s behavioral biases. The less wealthy, the more the practitioner should moderate a client’s biases.

**Rationale:** A client’s outliving his or her assets constitutes a far graver investment failure than a client’s inability to accumulate wealth. The likelihood of a client outliving his or her assets is a function of the level of wealth. If a bias is likely to endanger a client’s standard of living, moderating is an appropriate course of action. If a bias will only jeopardize the client’s standard of living if a highly unlikely event occurs, adapting may be more appropriate. However, the potential impact of low-probability, high-impact events should be discussed with the client.

**Guideline II:** The decision to moderate or adapt to a client’s behavioral biases during the asset allocation process depends fundamentally on the type of behavioral bias the client exhibits.
Specifically, clients exhibiting cognitive errors should be moderated, and those exhibiting emotional biases should be adapted to.

**Rationale:** Because cognitive errors stem from faulty reasoning, better information and advice can often correct them. Conversely, emotional biases originate from feelings or intuition rather than conscious reasoning, and thus they are more difficult to correct.

In this context, **wealth is determined in relation to lifestyle, not just based on the level of assets.** Some people have high levels of assets but also have an extravagant financial lifestyle to match, implying a “low” level of wealth; in other words, some people have a lot of assets but also spend accordingly. This behavior is related to **standard of living risk.** Standard of living risk (SLR) is the risk that the current or a specified acceptable lifestyle may not be sustainable.

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**Exhibit 5**

**Visual Depiction of Guideline I and Guideline II**

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b. **How Much to Moderate or Adapt**

A key concept in creating a behaviorally modified asset allocation is to decide how much it should deviate from the “rational” allocation of traditional finance.
The amount of change appropriate to modify an allocation will in large part depend on the number of asset classes used in the allocation. A 5 percent change in 10 asset classes, for example, could yield a substantial tilt to or away from risky assets; however, for an asset allocation with 4 asset classes, 5 percent would not be enough.

Allocation recommendations do not necessarily need to be inefficient; they can still be on the efficient frontier. They can move up or down it based on the client’s behavioral make-up. However, even if the portfolio is on the efficient frontier, it may be inefficient considering transaction costs and the financial objectives of the investor.

Institutional investors and money managers are not immune to behavioral biases. They should be particularly wary of cognitive errors. They should attempt to accept their knowledge limits and avoid belief perseverance and information-processing errors. Overconfidence is an emotional bias to which they may be particularly susceptible.

Designing a standard asset allocation program with a client involves the following steps:

1) Advisers first administer a risk tolerance questionnaire;
2) Advisers discuss the client’s financial goals and constraints;
3) Advisers typically recommend the output of a mean–variance optimization from any number of financial planning software programs.
### Case Studies

Basic diagnostic questions for behavioral bias:

<table>
<thead>
<tr>
<th>Behavioral Bias</th>
<th>Diagnostic Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss Aversion</td>
<td>Imagine you make an investment that drops 25 percent in the first six months. You are unsure if it will come back. What would you normally do (NOT what you think you should do; what you would do)?</td>
</tr>
<tr>
<td>Endowment</td>
<td>How would you describe your emotional attachment to possessions or investment holdings?</td>
</tr>
<tr>
<td>Status Quo</td>
<td>How would you describe the frequency of your trading?</td>
</tr>
<tr>
<td>Anchoring</td>
<td>You purchase a stock at $50 per share. It goes up to $60 in a few months, and then it drops to $40 a few months later. You are uncertain what will happen next. How would you respond to this scenario?</td>
</tr>
<tr>
<td>Mental Accounting</td>
<td>Generally, do you categorize your money by different financial goals, or do you look at the bigger financial picture?</td>
</tr>
<tr>
<td>Regret Aversion</td>
<td>Have you ever made an investment that you have regretted making? How did that affect your future investing decisions?</td>
</tr>
<tr>
<td>Hindsight</td>
<td>Do you believe investment outcomes are generally predictable or unpredictable?</td>
</tr>
<tr>
<td>Framing</td>
<td>Assume you have agreed to a financial plan created by your adviser that has a projected return of 9 percent and an annual standard deviation of +/-15% (a typical plan). Would it surprise you to know that statistically in the worst case, the plan’s return could be negative 36 percent or more in one year out of 100? Would this information cause you to rethink your risk tolerance?</td>
</tr>
<tr>
<td>Conservatism</td>
<td>Assume you make an investment based on your own research. An adviser presents you with information that contradicts your belief about this investment. How would you respond?</td>
</tr>
<tr>
<td>Availability</td>
<td>Do you ever make investment decisions (such as selecting a mutual fund or online broker) based on word-of-mouth or name recognition?</td>
</tr>
<tr>
<td>Representativeness</td>
<td>Have you ever made a new investment because of its apparent similarity to a past successful investment (e.g., a tech stock or value stock) without doing research to validate the new investment’s merits?</td>
</tr>
<tr>
<td>Overconfidence</td>
<td>Suppose you make a winning investment. How do you generally attribute the success of your decision?</td>
</tr>
<tr>
<td>Confirmation</td>
<td>Suppose you make an investment based on your own research. The investment doesn’t move up as much as you thought it might. How are you likely to respond?</td>
</tr>
<tr>
<td>Illusion of Control</td>
<td>You are offered two free lottery tickets. You may either select your own numbers or have a machine do it. What would you do?</td>
</tr>
<tr>
<td>Self-Control</td>
<td>Do you tend to save or spend disposable income?</td>
</tr>
</tbody>
</table>