Approved Prep Provider CFA Institute

# Level III

## The Behavioral Biases of Individuals

2020 Exam

# Contents

# 1. Introduction

- Summary of what we studied in the earlier reading
- Behavioral Finance Micro (BFMI)
- Behavioral  Finance Macro (BFMA)
- Financial Market Participants (FMPs)

# 2. Categorization of Behavioral Biases

**Cognitive Errors**

- Stem from statistical, information processing or memory errors
- Faulty reasoning
- Can be corrected through better information or education

**Emotional Biases**

- Biases influenced by feelings and emotion
- Spontaneous
- Less easy to correct

# 3. Cognitive Errors

**Belief Perseverance**

1. Conservatism Bias → Maintain prior views by inadequately incorporating new information
2. Confirmation Bias → Look for and notice what confirms their beliefs
3. Representativeness Bias → Classify new information based on past experiences
4. Illusion of Control Bias → False belief that we can influence or control outcomes
5. Hindsight Bias → See past events as having been predictable

**Information Processing**

6. Anchoring & Adjustment Bias → Incorrect use of psychological heuristics
7. Mental Accounting Bias → Treat one sum of money different from other
8. Framing Bias → Answer question differently based on how it is asked
9. Availability Bias → Heuristic approach influenced by how easily outcome comes to mind

*Memorize and reproduce on next slide*

Exercise: Briefly describe the five cognitive errors related to belief perseverance

Exercise: Briefly describe the four cognitive errors related to processing errors

## Conservatism Bias

Maintain prior views or forecasts by inadequately incorporating new information

Has aspects of statistical and information processing errors

Causes individuals to overweight initial beliefs about probabilities and outcomes

Under-react to new information

**Example 1**

**Conservatism in Action**

**Analysts Lag Reality**

**Embedded Example:**
Investor hold a pharma stock; expecting approval  on new drug
However, company announces that there are some issues in getting approval
If investor exhibit conservatism bias what is the likely behavior?

**Overcoming Conservatism Bias:**

1. Recognize that bias exists

2. Ask questions: How does this information change my forecasts? Impact?

3. Updating beliefs is inversely correlated with effort involved

4. Seek advice from experts

## Confirmation Bias

Look for and notice what confirms your beliefs

Embedded example: Client insists on adding a stock… points only to research/articles which support his view

**Consequences**

1. Consider only positive information and ignore negative information
2. Develop screening criteria and ignore information that refutes validity of screening criteria
3. Under-diversify → excessive exposure to risk
4. Hold disproportionate amount of investment assets in employing company's stock

**Overcoming Confirmation Bias**

- Seek information which challenges your beliefs
- Get corroborating support from other sources

## Representativeness Bias

Classify new information based on past experiences and classifications

Base-Rate Neglect: base rate or probability of categorization is not adequately considered
Categorize Company ABC as growth stock without appropriate due diligence
Rely on stereotypes without adequately incorporating base probability of stereotype occurring

Sample-Size Neglect: FMPs incorrectly assume that small samples are ***representative*** of populations

**Consequences of Representativeness Bias**

Adopt a view or a forecast based almost exclusively on new information and/or small sample

Update beliefs using simple classifications rather than deal with mental stress of updating beliefs given complex data; see embedded example

(to some extent this is the opposite of conservatism bias)

# Example 2

## Representativeness

**Overcoming Representativeness Bias**

Be aware of statistical mistakes you may be committing

Are you overlooking reality of investment situation?

**Illusion of Control Bias** Incorrectly believe that you can control or influence outcomes

**Consequences:**

1. Trade more than is prudent. Example: Day-traders believe they have 'control' over investment returns
2. Inadequate diversification. Invest in company where you work because you control the company's future

**Overcoming this Bias**

Recognize that investing is a probabilistic activity

Global capitalism is complex → Even powerful investors have little control over outcomes

Seek contrary viewpoints

Keep records

## Hindsight Bias

See past events as having been predictable and reasonable to expect

"In hindsight, poorly reasoned decisions with positive results maybe described as brilliant tactical moves, and poor results of well-reasoned decisions may be described as avoidable mistakes."

**Consequences:**

1. FMPs overestimate degree to which they predicted past investment outcomes → false confidence
2. Unfairly assess money manager or security performance

**Overcoming this Bias**

Recognize the bias

Am I re-writing history or being honest about mistakes I made?

Carefully record and examine investment decisions – both good and bad

So far we have covered the five belief preservation biases

Exercise: Identify the five biases along with the major consequences of each bias

Exam Tip

**Now we'll move on to the four information-processing biases**

## Anchoring and Adjustment Bias

Psychological heuristic influences how people estimate probabilities

Set an anchor which influences decisions; do not change or adjust anchor easily

**Consequence:**

FMPs may stick too closely to original estimates when new information is learned

**Overcoming this Bias**

Consciously ask questions that may reveal an anchoring and adjustment bias

Recognize that past prices and market levels are not an indication of what will happen in the future

## Mental Accounting Bias

Treat one sum of money different from another sum of money based on which metal account (layer) the money is assigned to

Theoretically problematic because money is fungible

**Consequences**

Money placed in 'buckets' or 'layers'

Neglect opportunity to reduce risk by combining assets with low correlations

Irrationally distinguish between returns derived from income vs. capital appreciation

**Overcoming this Bias**

Recognize drawbacks of putting money in different buckets

Combine all assets on one spreadsheet

Focus on total return

## Framing Bias

Information processing bias in which a person answers questions differently depending on how the questions is asked (**framed**)

25% patients who take the medicine will survive vs. 75% patients will die

**Consequences**

Willingness to accept risk is influenced by how situations are framed → Misidentify risk tolerances

Choose sub-optimal investments based on how information about specific investment is framed

Narrow frame → Focus on short-term price fluctuations

**Overcoming this Bias**

Ask questions: Is decision the result of focusing on net gain or net loss position

Try to be neutral and open-minded when evaluating investments

**Example 3**

**Framing Bias**

**Availability Bias**

Take a heuristic approach to estimating the probability of an outcome based on how easily the outcome comes to mind

Easily recalled and understandable outcomes are perceived as more likely

Sources of Availability Bias

- Retrievability
- Categorization
- Narrow range of experience
- Resonance

**Consequences**

1. Choose investment, investment advisor or mutual fund based on advertising
2. Limit investment opportunity set
3. Fail to diversity
4. Fail to achieve appropriate asset allocation

**Overcoming the Bias**

1. Recognize the bias
2. Disciplined approach to investing
3. Ask good questions: Did I consider all options?
4. Recognize that we forget events that happened a few years ago

## Cognitive Errors - Conclusion

Statistical, information processing or memory errors that result in faulty reasoning and analysis

To avoid these errors:

1. Be vigilant and recognize that these errors do occur
2. Ask good questions
3. Gather record and synthesize data
4. Follow a systematic approach

**Exercise: Identify the four information processing biases along with consequences**

# 4. Emotional Biases

1. Loss-Aversion → Prefer avoiding losses over achieving gains
2. Overconfidence → Unwarranted faith in ones abilities
3. Self-Control → Fail to act in pursuit of long term goals
4. Status Quo → Do nothing rather than make a change
5. Endowment → People value asset more when they hold rights to it
6. Regret Aversion → Avoid pain of regret associated with bad decisions

**Loss Aversion**

**Exhibit 3**

**Value function**
**Of Loss Aversion**

**Consequences:**

Hold investments in loss position longer than justified → Hold riskier portfolios than is justified

Sell investments in gain position earlier than justified → Trade excessively as a result of selling winners

Myopic loss aversion: even long term investors are influenced by annual returns

**Example 4**

**Overcoming loss aversion bias**: use a disciplined approach based on fundamental analysis

## Overconfidence Bias

People demonstrate unwarranted faith in their own intuitive reasoning, judgments and/or cognitive abilities

**Illusion of knowledge bias**

Prediction overconfidence (confidence intervals too narrow)

Certainty overconfidence (probabilities too high)

**Self-attribution bias**: take credit for success and assign responsibility for failures

**Consequences**

1. Underestimate risks and overestimate expected returns
2. Hold poorly diversified portfolios
3. Trade excessively
4. Experience lower returns than those of the market

**Overcoming the Bias**

1. Review trading records, identify winners/losers
2. Calculate portfolio performance over 2+ years
3. “Don’t confuse brains with a bull market”
4. Conduct post investment analysis

## Self-Control Bias

People fail to act in their long term best interest because of lack of self-discipline

“People pursuing CFA Charter may fail to study sufficiently because of competing short-term demands…”

**Consequences**

1. Save insufficiently for the future, and on realizing this…
2. Accept excessive risk to generate high returns
3. Asset allocation imbalance problems. Too much in income producing investments. If the income is consumed then might not have enough for retirement.

**Overcoming the Bias**

1. Create a good plan
2. Execute the plan

## Status Quo Bias

People do nothing instead of making a change

"If it ain't broke, don't fix it"

Often confused with endowment and regret aversion biases
What is the difference?

**Consequences**

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

**Overcoming the Bias**

1. Education
2. Quantify risk-reducing and return-enhancing advantages of diversification and proper asset allocation

## Endowment Bias

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

Violates the law of one price

Can combine with status quo bias

Clients reluctant to sell assets bequeathed by earlier generation

**Consequences**

1. Fail to sell certain assets and replace with other assets
2. Maintain inappropriate asset allocation
3. Continue to hold familiar assets

**Overcoming the Bias**

1. When dealing with inherited assets ask the question: if I were given an equivalent amount in cash how would I invest
2. Address emotional attachment

## Regret Aversion Bias

People tend to avoid making decisions that will result in action out of fear that the decision will turn out poorly

Regret from action that is taken: error of commission
Regret from action not taken: error of omission

**Consequences**

1. Be too conservative with investment choices because of poor outcomes in the past
2. Engage in herding behavior

**Overcoming the Bias**

1. Education
2. Quantify risk-reducing and return-enhancing advantages of diversification and proper asset allocation
3. Recognize that losses happen to everyone

**Exercise: Identify the six emotional biases along with consequences**

# 5. Investment Policy and Asset Allocation

Behavioral biases should be accounted for when creating IPS and defining asset allocation

Think about:

1. Which biases does the client show evidence of?
2. Which bias dominates
3. Effect of biases on asset allocation
4. What adjustments should be made to a 'rational' asset allocation to account for client's behavioral makeup

The Goal-Based Investment Approach is one way of incorporating behavioral finance into an IPS

Financial Goals

Investment Characteristics

# 5.1 Behaviorally Modified Asset Allocation

Adapt to Bias
or
Moderate Impact of Bias

# Adapt to Bias vs. Moderate Impact of Bias

**High Wealth**
**Low SLR**

**Low Wealth**
**High SLR**

**Cognitive Errors** **Emotional Biases**

# Deviations from a Rational Portfolio

| | Cognitive Errors | Emotional Biases |
|---|---|---|
| **High Wealth**<br>**Low SLR** | Modest Asset Allocation Change<br>+/- 5 to 10% | Stronger Asset Allocation Change<br>+/- 10 to 15% |
| **Low Wealth**<br>**High SLR** | Close to Rational Asset Allocation<br>+/- 0 to 3% | Modest Asset Allocation Change<br>+/- 5 to 10% |

# 5.2 Case Studies

- Extremely Important!
- Exhibit 7: Practical  method of detecting biases
- Exhibit 8: Digging deeper to confirm specific biases
- Read the cases carefully
- Jot down your solution in bullet point format
- Read solution

# Summary 1/3

- **Cognitive errors can be broken down into two types**
  - Belief perseverance biases: People hold on to original beliefs and they react selectively to new information. Examples: Conservatism, Confirmation, Hindsight, Illusion of control, representativeness
  - Information processing biases: Also called statistical errors. These errors can occur because people process information incorrectly or because of memory errors or faulty reasoning. Examples: Framing, Anchoring & Adjustment, Mental Accounting, Availability.

- **Emotional biases are influenced by** feelings and emotion and usually related with human behavior to avoid pain and produce pleasure; arise spontaneously as a result of attitudes and feelings; are less easy to correct and can only be "adapted to". Examples: loss-aversion, overconfidence, self-control, endowment, regret aversion, and status quo.

| Belief perseverance Bias | Description | Examples/Implications |
|---|---|---|
| **Conservatism** | Maintain prior views by inadequately incorporating new information | • Hold winners or losers too long<br>• Under-react to new information<br>• exhibit discomfort or difficulty in processing new information |
| **Confirmation** | Look for and notice what confirms prior beliefs | • Focus on confirmatory/positive information about existing investments<br>• Over-react to confirmatory/positive information<br>• Hold under-diversified portfolio |
| **Hindsight** | See past events as having been predictable | • Overestimate the degree to which a prior event was predictable |
| **Illusion of Control** | False belief that we can influence or control outcomes | • Feeling of control over company where one works<br>• Hold under-diversified portfolio |
| **Representativeness** | Classify new information based on past experiences | • Look for patterns in new information<br>• Over-optimism about a past winner<br>• Treat small sample as "representative" of entire population<br>• Invest in companies that remind one of successful clients<br>• Over-react to new information and neglect base rate<br>• Excessive trading and high manager turnover (owing to focus on short-term performance) |

# Summary 2/3

| Information-Processing Biases | Description | Examples/Implications |
|---|---|---|
| **Framing** | Answer question differently based on how it is asked/framed | • Exhibit risk-averse (risk-seeking or loss-aversion) attitude when outcomes are framed in terms of gains (losses) |
| **Anchoring and Adjustment** | developing estimates based on "anchor" value (e.g. target price) and adjusting decisions up or down based on that value | • Place high weight on anchor<br>• Under-react to new information<br>• Influenced by purchase price or arbitrary price levels |
| **Mental Accounting** | Treat one sum of money different from other depending on source or use | • Investing some money very conservatively and the rest in speculative stocks.<br>• Ignore correlations among various assets and total return<br>• Hold suboptimal portfolio due to inefficient asset allocation |
| **Availability** | Influenced by how easily outcome comes to mind | • Place high weight on easily available information → influenced by advertising<br>• Select alternatives with which one has greater resonance; select alternatives that are easily retrievable<br>• Focus on a limited set of investments ("categorization")<br>• Make investment decisions based on their familiarity with the industry or country ("narrow range of experience") |

# Summary 3/3

| Emotional Bias | Description | Examples/Implications |
|---|---|---|
| **Loss Aversion** | Prefer avoiding losses over achieving gains | • Hold on to losing stocks too long and sell winning stocks too early (also called "disposition effect") |
| **Overconfidence** | Unwarranted faith in one's abilities (Illusion of knowledge; self-attribution) | • Excessive trading<br>• Narrow confidence intervals<br>• Assign high probability of success |
| **Self-Control** | Fail to act in pursuit of long-term goals | • Focus on short-term satisfaction<br>• Fail to save enough for the future |
| **Endowment** | Exhibit an emotional attached to the asset owned | • Shares in father's company a source of family pride<br>• People value asset more when they hold rights to it<br>• Hold inherited/purchased securities |
| **Regret Aversion** | Avoid pain of regret associated with bad decisions | • Hold losing positions for too long<br>• Prefer low risk assets<br>• Engage in "herding behavior"<br>• Prefer maintaining positions in familiar investments |
| **Status Quo** | Do nothing rather than make a change | • Hold on to securities even if they are inconsistent with risk/return objectives; trade very infrequently |

Behavioral biases can be incorporated into an IPS using two approaches:

i. **Goal-Based Investment Approach**: portfolio is constructed in layers, representing investment goals and asset allocation within each layer.

ii. **Behaviorally Modified Asset Allocation**: portfolio is constructed by selecting an asset allocation that satisfies investor's natural psychological & behavioral preferences.

The decision to moderate or adapt to a client's behavioral biases during the asset allocation process depends on two factors:

a) Client's level of wealth

- High wealth → low SLR(standard of living risk) → adapt to biases
- Low wealth → high SLR → try to moderate biases

b) Type of behavioral biases the client exhibits