# Portfolio Management

# The Behavioral Biases of Individuals

## Exam Focus

- Cognitive errors
- Emotional biases
- Market impact



## Behavioral Biases

- Cognitive errors
  - Faulty reasoning
  - Irrationality
- Emotional biases
  - Stem from feelings, impulses, or intuition

# Cognitive Errors: Belief Perseverance

| | | |
|---|---|---|
| Conservatism bias | Confirmation bias | Representativeness bias |
| Illusion of control bias | Hindsight bias | |



# Cognitive Errors: Example

Thomas Francisco is getting nervous that the market has experienced several consecutive days of losses and is getting uncomfortable having experienced many market downturns throughout his lifetime. Based on his experience he is subconsciously putting the recent market activity into the category of a market trend. Which of the following biases is Francisco *most likely* exhibiting?

A. Hindsight bias
B. Representativeness bias.
C. Confirmation bias.

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## Hindsight Bias: Example

Beverly Bolo, an analyst at an investment advisory firm, is giving a presentation to clients that, among other topics, explains the firm's investment results during past macroeconomic downturns. In the presentation, Bolo points out that the "occurrence of the last recession was obvious upon inspection of the yield curve and other leading indicators eight months before the downturn started."

Source: CFA Institute. Used with permission.



## Cognitive Errors: Information-Processing Biases

| | |
|---|---|
| Anchoring bias | Mental accounting bias |
| Framing bias | Availability bias |

## Anchoring and Adjustment Bias: Example

Aiden Smythe is an equity research analyst at a brokerage firm. Smythe covers Industrial Lift Plc, a company that manufactures construction machinery. The company's business is sensitive to macroeconomic conditions, particularly non-residential construction activity. Last year, Industrial Lift reported £1.00 in EPS amid mostly strong non-residential construction activity levels. Smythe is updating his EPS estimate for this year. Non-residential construction activity has severely declined in the last two months, and some economists fear that a recession is likely. As a result, Smythe forecasts that EPS will fall 10% from the prior-year level, publishing a £0.90 estimate for the year.

Source: CFA Institute. Used with permission.



## Framing Bias: Example

Suppose an investor is to take a risk tolerance questionnaire for the purpose of determining which "risk category" she is in. The risk category will determine asset allocations and the appropriate types of investments. The following information is provided to each questionnaire taker:

> Over a 10-year period, Portfolio ABC has averaged an annual return of 10% with an annual standard deviation of 16%. Assuming a normal return distribution, in a given year there is a 67% probability that the return will fall within one standard deviation of the mean, a 95% probability that the return will fall within two standard deviations of the mean, and a 99.7% probability that the return will fall within three standard deviations of the mean. Thus, there is a 67% chance that the return earned by Portfolio ABC will be between −6% and 26%, a 95% chance that the return will be between −22% and 42%, and a 99.7% chance that the return will be between −38% and 58%.

Source: CFA Institute. Used with permission.

## Framing Bias: Example

1. Based on the following chart, which investment portfolio fits your risk tolerance and desire for long-term return?

| Portfolio | 95% Probability Return Range | 10-Year Average Return |
|---|---|---|
| XYZ | 0.5% to 6.5% | 3.5% |
| DEF | –18.0% to 30.0% | 6.0% |
| ABC | –22.0% to 42.0% | 10.0% |

Source: CFA Institute. Used with permission.



## Framing Bias: Example

2. Based on the following chart, which investment portfolio fits your risk tolerance and desire for long-term return?

| Portfolio | 10-Year Average Return | Standard Deviation of Returns |
|---|---|---|
| XYZ | 3.5% | 1.5% |
| DEF | 6.0% | 12.0% |
| ABC | 10.0% | 16.0% |

Source: CFA Institute. Used with permission.

## Availability Bias: Example

Which of the following statements *best* describes the availability bias? An investor:

A. lacks self-discipline and favors immediate gratification over long-term goals.
B. bases a decision on how the information is presented.
C. associates new information with an easily recalled past event.

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## Emotional Biases

| | | |
|---|---|---|
| Loss aversion bias | Overconfidence bias | Self-control bias |
| Status quo bias | Endowment bias | Regret aversion bias |

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## Overconfidence Bias: Example

An analyst estimates that the price of oil will increase by 40% over the next 12 months because prevailing prices are lower than many oil producers' cost of production. Unprofitable producers reducing production will eventually put upward pressure on prices so long as oil demand remains stable or increases. Based on this forecast, the analyst recommends several high-yield bonds of oil producers to a portfolio manager.

The portfolio manager asks the analyst for an estimate of downside risk: "How much could we lose if, say, the oil price falls another 10%?" The analyst replies, "That is unrealistic. The current oil price is as low as it can go, and yields on these bonds are as attractive as they will ever be. We must make the investment now. There is no credible downside case."

Source: CFA Institute. Used with permission.



## Endowment Bias: Example

Several of an investment analyst's recommended stocks have done well for the past five years, prompting the portfolio manager to ask for a brief update on each, including valuations. For each stock, the analyst estimates that fair value is at least another 40% above the current price.

The portfolio manager challenges the analyst by pointing out that the fair value estimates imply valuation multiples that are at least two standard deviations above the five-year average and are well above even the most bullish sell-side analyst's target price.

The analyst responds by saying that the market is overlooking these companies' fundamentals. The portfolio manager then asks, "Would you buy these shares today?" The analyst answers, "Probably not."

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## Market Impact of Behavioral Biases

- Market anomalies
- Bubbles and crashes
- Halo effect
- Home bias



## Solutions

## Cognitive Errors: Example

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A. Hindsight bias
B. Representative bias.
C. Confirmation bias.

With representativeness bias, individuals classify information into subjective categories; they place new information into the most appropriate category based on personal experiences. Investors feel that "if" information looks a certain way, "then" it fits into a certain category.

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## Hindsight Bias: Example

Beverly Bolo, an analyst at an investment advisory firm, is giving a presentation to clients that, among other topics, explains the firm's investment results during past macroeconomic downturns. In the presentation, Bolo points out that the "occurrence of the last recession was obvious upon inspection of the yield curve and other leading indicators eight months before the downturn started."

Bolo's comment exhibits hindsight bias. Recessions, like any other event, appear obvious in hindsight but are hardly ever accurately predicted. Bolo could augment her remarks by exploring how often these leading indicators suggested that a recession is imminent against how often a recession subsequently occurred.

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## Anchoring and Adjustment Bias: Example

Aiden Smythe is an equity research analyst at a brokerage firm. Smythe covers Industrial Lift Plc, a company that manufactures construction machinery. The company's business is sensitive to macroeconomic conditions, particularly non-residential construction activity. Last year, Industrial Lift reported £1.00 in EPS amid mostly strong non-residential construction activity levels. Smythe is updating his EPS estimate for this year. Non-residential construction activity has severely declined in the last two months, and some economists fear that a recession is likely. As a result, Smythe forecasts that EPS will fall 10% from the prior-year level, publishing a £0.90 estimate for the year.

Smythe's estimate exhibits anchoring and adjustment. Smythe's anchor is the prior year's EPS of £1.00, despite the possibility of a material change in underlying conditions.



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# Framing Bias: Example

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The two questions focus on hypothetical Portfolio ABC, DEF, and XYZ. The risk and return for each portfolio are the same in each of the two questions, but the presentation of information differs.

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# Framing Bias: Example

2. Based on the following chart, which investment portfolio fits your risk tolerance and desire for long-term return?

| Portfolio | 10-Year Average Return | Standard Deviation of Returns |
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| XYZ | 3.5% | 1.5% |
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| ABC | 10.0% | 16.0% |

An investor may choose different portfolios when asked Question 1 compared with Question 2. Portfolio XYZ may appear more attractive in the first question, which uses two standard deviations to define the range of returns and show the risk, than in the second, which shows only the standard deviations. Also, in the second question, the returns are presented first and the measure of risk second. Thus, how questions are framed and the order in which they are presented can significantly affect how they are answered.

Source: CFA Institute. Used with permission.

## Availability Bias: Example

Which of the following statements *best* describes the availability bias? An investor:

A. lacks self-discipline and favors immediate gratification over long-term goals.
B. bases a decision on how the information is presented.
C. associates new information with an easily recalled past event.

With availability bias, individuals estimate future probabilities by how easily they recall a past event. An easily recalled event is more quickly associated with (fit to) new information. The problem is worsened by the fact that individuals' memories can be incomplete or biased.

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## Overconfidence Bias: Example

An analyst estimates that the price of oil will increase by 40% over the next 12 months because prevailing prices are lower than many oil producers' cost of production. Unprofitable producers reducing production will eventually put upward pressure on prices so long as oil demand remains stable or increases. Based on this forecast, the analyst recommends several high-yield bonds of oil producers to a portfolio manager.

The portfolio manager asks the analyst for an estimate of downside risk: "How much could we lose if, say, the oil price falls another 10%?" The analyst replies, "That is unrealistic. The current oil price is as low as it can go, and yields on these bonds are as attractive as they will ever be. We must make the investment now. There is no credible downside case."

The analyst is exhibiting overconfidence bias by placing excessive certainty in his prediction and not considering the likelihood or impact of variance from that prediction.

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# Endowment Bias: Example

Several of an investment analyst's recommended stocks have done well for the past five years, prompting the portfolio manager to ask for a brief update on each, including valuations. For each stock, the analyst estimates that fair value is at least another 40% above the current price.

The portfolio manager challenges the analyst by pointing out that the fair value estimates imply valuation multiples that are at least two standard deviations above the five-year average and are well above even the most bullish sell-side analyst's target price.

The analyst responds by saying that the market is overlooking these companies' fundamentals. The portfolio manager then asks, "Would you buy these shares today?" The analyst answers, "Probably not."

The analyst is likely exhibiting endowment bias by overestimating the value of shares already owned in the portfolio. This bias is likely the result of having successfully invested in the shares.

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