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The Gambler's Fallacy, the Halo Effect, and the Familiarity Effect Based on Risk Profile: Bullish and Bearish Market in Indonesia Stock Exchange

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Abstract: This study tests three behavioral biases: the gambler's fallacy, the halo effect, and the familiarity effect. The novelty is the behavioral bias in bullish and bearish markets, based on different investors' risk profiles. The questionnaire used a Likert scale. This study argues that bullish and bearish markets, and different risk profiles, affect investors' behavioral bias. The gambler's fallacy occurs when markets are bullish and partially when markets are bearish. The halo effect without risk profile does not occur in either market, and the familiarity effect occurs in both markets. Investors with a very conservative risk profile will experience behavioral bias, especially the gambler's fallacy and the familiarity effect, with bullish and bearish markets. Investors with a conservative risk profile will partially experience the halo effect in bullish markets.

Keywords: behavioral bias, investors' risk profile, gambler's fallacy, halo effect, familiarity effect
JEL Classification: G11, O16, D91, E22

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Introduction

The utility theory describes the condition of a person who makes decisions based on rationality and can process the information received perfectly (Kazem, 2021). This is not in accordance with the actual conditions, in which investors rely on intuition and feelings rather than the available information. On the other hand, the information received by each investor must be processed into a decision-making action as soon as possible. As a result, the decisions made are mostly biased due to the limited available time to process the information from the market (Onsomu, 2014).

This study examines three behavioral biases: the gambler's fallacy, the halo effect, and the familiarity effect. Choi and Skiba (2015) examine the gambler's fallacy in investor behavior and prove that investors experience the gambler's fallacy when they invest like they were gambling. The tendency to "gamble" occurs when markets are bullish rather than bearish. The halo effect occurs when investors look for brokers who can represent a formal and rigid capital market environment (Gong & Dai, 2017). The familiarity effect occurs when investors prefer familiar things to new things (Bretcu, 2019; Istanbul, Yurttadur, & Ozcelik, 2019; Parveen, Wajid, Abdul, & Jamil, 2020). People tend to be more willing to take risks when they understand the situation (Shanmuganathan, 2020). The gambler's fallacy, the halo effect, and the familiarity effect signify a situation of panic (Gong & Dai, 2017) and ambiguity (Fan, 2019); thereby, they are fascinating to study because they relate to investor responses during bullish or bearish markets. Capital market conditions also play a role in influencing investor behavior. Investors are more likely to succeed in bullish than bearish markets (Hanna, 2018). Investors will trade excessively in bullish markets, rather than bearish markets, because stock prices tend to increase, making it easier to earn profits (Choi and Skiba, 2015).

Studies on bullish and bearish markets have been carried out in several countries like India (Dharani, Hassan, & Paltrinieri, 2019), Spain (Alda, 2015), South Africa (De & Gerber, 2017), and Europe (Bai & Campus, 2014). The bullish and bearish markets in the market efficiency hypothesis have been examined by Djojopranoto and Mahadwartha (2016). The bearish and bullish markets that describe market sentiment on stock index movements are exciting to study in Indonesia, which has uncertain economic conditions. This study forms a new model of the bullish and bearish markets, previously studied by Djojopranoto and Mahadwartha (2016), and concerns risk profiles (Hunt, 2016). This study fills the gap by shedding light on the behavioral bias in bullish and bearish markets, based on investors' risk profiles.

Momentum will be more assertive in bullish markets (Choi & Skiba, 2015; Gong & Dai, 2017). Momentum will only appear after the uptrend is bullish, with the volume of transactions increasing compared to bearish markets. Investors tend to avoid risks in

bullish markets and take risks in bearish markets. Hunt's (2016) study will influence the risk profile discussion in both market conditions. Kyriazis (2020) also notes that herding behavior only occurs during bullish markets. This research's contribution is to divide bullish and bearish conditions to determine the effects of each risk profile and behavioral bias on the bearish and bullish markets. This study also extends Hunt's (2016) study that focused on investors' risk perception but combines stock and bond investors. In this case, investors have different controls and unique combinations of tolerance for financial risk. This condition causes investors to have insufficient rationale to consider the information received, so that during the decision-making process, they have different reactions.

The tested behavioral biases were the gambler's fallacy, the halo effect, and the familiarity effect. This study argues that bullish and bearish conditions are thought to be the factors causing the three behavioral biases that affect investment decision-making. At the same time, the risk profile will determine the effect of each behavioral bias on bearish and bullish markets. According to the theory by Kazem (2021), an investor must be rational during the decision-making process, but several behavioral patterns: the gambler's fallacy, the halo effect, and the familiarity effect, as described above, can cause investors to make irrational decisions. One factor that shapes the three behavioral patterns is bullish and bearish market conditions that affect investors' decision-making reactions. In addition, each investor's risk profile will also form different decision patterns and result in behavioral bias. This behavioral bias is expected to align with the research's hypotheses so that they can become information for capital market investors to maximize the value of their portfolios.

This present study argues that an investor's rationality will be tested (Bretcu, 2019; Goel & Tripathi, 2021; He, Mau, & Xu, 2021), especially when making investment decisions. This study implicates the behavioral biases in the investor's risk profile to find differences in the behavioral bias of the investor's risk profile categorization. Bearish and bullish markets make investors biased in processing information, and they produce irrational behavior that pushes market efficiency away. Meanwhile, the risk profile will determine the effect of each behavioral bias on the bearish and bullish markets. A very conservative risk profile tends to consistently experience the gambler's fallacy and the familiarity effect, while a conservative risk profile tends to experience the gambler's fallacy bias. In addition, this study will have implications for investors in the Indonesian capital markets. Bullish and bearish market conditions with different investor risk profiles make the decision-making process increasingly less likely to result in rational decisions. As a result, the market pattern that is formed becomes inefficient and has an impact on each investor's portfolio.

Literature Review

Risk Profile

A risk profile is related to evaluating a person's willingness to take risks. The profile determines the proportion of asset allocation in a portfolio, and each investor's reaction in addressing risks (Hunt, 2016; Khalil et al., 2016). Investor reactions will produce different behavior among investors; possibly leading to behavioral bias. Djojopranoto and Mahadwartha (2016) examine the behavioral bias of investors in bearish and bullish market conditions. This present study extends the behavioral bias model of Djojopranoto and Mahadwartha (2016) by adding the investors' risk profile. This study initially argues that the risk profile will cause a significant difference in behavioral bias in bullish and bearish markets. Djojopranoto and Mahadwartha's (2016) research focuses on bearish and bullish markets, but this study develops periods and processes by examining all the bullish and bearish periods in the capital markets. Stock and bond investors' risk perceptions are different when measuring risk but have similarities when measuring market returns (Wijayanti, Suganda, & Thewelis, 2019). Meanwhile, this study combines stock and bond investors in the same sample, as both have psychological sentimentality (Angeles, Alda, & Paula, 2020). Thus, the findings are expected to support the behavior of the capital markets' investors.

The risk profile is divided into four groups: very conservative, conservative, moderate, and aggressive. These four groups determine the hypotheses related to behavioral bias that is to be tested. The conservative group will have a dominant behavioral bias, which will be different to that of the other groups. The impact of a different risk profile will be more substantial in bullish and bearish conditions. The very conservative risk profile has very high sentimentality. If the condition is biased, irrational decision-making occurs more quickly.

The Gambler's Fallacy

Clotfelter and Cook (2014) reveal that individuals will significantly reduce their stake after winning a gamble. This behavior is because individuals avoid making the same decisions, even though the previous events occurred randomly. The gambler's fallacy refers to the belief that there is a negative correlation to a random event that should not be correlated (Du, Shelley, Du, & Shelley, 2014). When an event occurs more frequently over several periods, it is less likely that the same event will occur in the future and vice versa. This behavioral bias causes investors to invest less, based on their observations of the events in the previous period and vice versa. Wijayanti et al. (2019) postulate that the gambler's fallacy is less likely to happen when gambling. Still, statistical tests show that investors may experience both of these behavioral biases.

Khalil et al. (2016), Hanna (2018), Madaan & Singh (2019), & Tayyab, Hassan, and Jamil (2021) stipulate that previous trading outcomes are often used as references for making future investment decisions. As a result, investors who previously earned profits tend to reduce the amount they subsequently invest. Tayyab, Hassan, and Jamil (2021), in their study of the Pakistani capital markets' data, argue that the gambler's fallacy occurs due to low investor literacy related to the transaction mechanisms in the capital markets.

Bleaney, Bougheas, and Li (2017) examine differences in market conditions that can cause the gambler's fallacy. In bullish markets, investors tend to avoid buying stocks that previously experienced a price increase, because they believe that the probability of these stocks experiencing a price decline is more likely. Meanwhile, investors believe stocks that previously experienced a price decline will have a greater chance of experiencing a price increase in bearish markets.

The risk profile is an essential issue for research into investors' behavioral bias (Hunt, 2016; Leal, 2018). Each investor will have their own risk profile, and a different risk profile may cause differences in each investor's behavioral bias. For example, if something happens more frequently over time, the chances of it happening again are less in the future. Or, if something infrequently happens, the chances of it happening again are more likely in the future. This belief bias causes investors to invest less or more based on observations of the events in the previous period. The prospect theory shows that people with an irrational tendency are more reluctant to risk profits than losses; if someone is in a profit position, he/she tends to avoid risk, whereas if someone is in a loss position, he/she tends to dare to take risks. Investors who experience the gambler's fallacy tend to avoid buying stocks that experienced an increase in price in the previous period, because they believe that there will be a higher probability of the stock experiencing a price decline. Likewise, during a downtrend, investors assume the stocks that previously experienced a price decline will have a greater probability of experiencing a price increase. This study indicates differences in the gambler's fallacy behavior in each risk profile category (i.e., very conservative, conservative, moderate, and aggressive).

H1A: The gambler's fallacy behavior occurs in bullish markets.
H1B: The gambler's fallacy behavior occurs in bearish markets.
H1C: The gambler's fallacy behavior differs among each investor's risk profile category.

The Halo Effect

Behavioral bias can also lead to the halo effect. This effect can be defined as a cognitive bias with a tendency to general perceptions and descriptions of individuals based

on one characteristic (Bretcu, 2019; Wijayantietal., 2019). When investors do not have sufficient information, they make assumptions based on the information that they think is relevant. This information may cover other information that could be more relevant.

Yustina and Gudono (2017) explain that the halo effect occurs for investors when choosing company stocks for investment, even though there is probably no company attribute associated with the investment value. All the information relating to company quality is not permanently attached to the stock price, so it tends to be challenging to use such information when choosing company stocks. Information about the ratio size and book to market value can affect the investment value, making value and growth stocks more attractive (Gong & Dai, 2017; Wang, 2021). However, it is also possible that companies with small capitalization can generate greater returns than companies with large capitalization (Marwan, 2002).

The halo effect makes investors assume that trading in bullish markets will be more successful than in bearish ones (Bretcu, 2019; Choi & Skiba, 2015). Furthermore, investors will trade irrationally in bullish markets because they think they will earn a greater return than in bearish ones.

Differences in the investor's risk profile can also lead to different halo effect behavior for investors (Hunt, 2016; Madaan & Singh, 2019). A conservative risk profile in bullish markets will have a different halo effect behavior than in bearish conditions (Hanna, 2018; Leal, 2018). It will also occur in the other three risk profile categories: very conservative, moderate, and aggressive. This study argues that differences in the risk profiles will result in differences in investors' risk acceptance and ultimately differentiate investors in maximizing their utility expectations. The halo effect will occur, especially when individuals do not have enough information to make assumptions, but do so based on the one or two prominent pieces of information they have. This prominent information will cover other information that could be more relevant. Based on the prospect theory, individuals will seek information first and then make several decision frames. After the decision frame is made, they will choose one of the concepts that produce the most likely expected utility. The halo effect causes investors to assume that trading during an uptrend will be more successful than during a downtrend. Investors will trade irrationally during an uptrend because they think they will get a more significant return than during a downtrend. Their behavior in accepting risk will differ in bullish and bearish markets; thereby, the halo effect's behavioral bias will also be different.

H2A: The halo effect behavior occurs in bullish markets.

H2B: The halo effect behavior occurs in bearish markets.

H2C: The halo effect behavior differs among each investor's risk profile category.

The Familiarity Effect

The familiarity effect refers to the tendency to judge that something known is better than something unknown. In the investment context, investors tend to feel safer investing in well-known companies or investment products that have previously been used (Gong & Dai, 2017; Joni, Ahmed, & Hamilton, 2020). The explanation of the familiarity effect is almost the same as the explanation for the proximity effect. Physical and psychological closeness will increase personal interest in a specific object (Yustina & Gudono, 2017). Regarding the familiarity effect, investors tend to choose the stocks of companies that they have psychologically and/or physically consumed.

Investors' tendency to invest in domestic securities is known as home bias. One of the reasons is that investors feel more optimistic about the domestic market, compared to the international market. International investment is considered less attractive because of institutional barriers, such as restrictions on transferring capital, differences in trading costs, and tax rates (Bretcu, 2019).

Based on Liu, Park, and Sohn's (2018) study, familiarity is also supported by language and cultural differences. For example, Finland has two official languages, namely Finnish and Swedish, where financial reports are published in either Finnish or Swedish, or both languages. After analyzing some relevant factors, it is found that Finnish investors prefer companies that publish their financial reports in Finnish. On the other hand, Swedish investors prefer companies that publish their financial reports in Swedish.

Investors tend to prioritize the stocks of companies where they work or have well-known brands (Du et al., 2014; Vries and Gerber, 2017). For institutional investors, stock ownership is negatively related to brand recognition and not brand quality. It differs from retail investors who have a positive relationship with brand recognition, which is consistent with comfort-seeking and familiarity (Liu et al., 2018; Parveen et al., 2020).

The capital markets' conditions also influence investor sentiment, leading to familiarity. Risk-averse investors in bullish markets tend to be aggressive in bearish ones (Hanna, 2018; Mehmood & Hanif, 2014). In bullish markets, investors may experience the familiarity effect because investors are more optimistic about the domestic capital markets and tend to be risk-averse. Conversely, in bearish markets, investors tend to be more aggressive; they take more significant risks so that the familiarity effect does not occur (Papadamou, Kyriazis, Tzeremes, & Corbet, 2021).

The four risk profile groups will have a different familiarity effect behavior in bullish and bearish conditions. For instance, an investor under a very conservative group will have a different familiarity effect behavior in bullish and bearish conditions (Du et al., 2014). This also applies to the other three groups: conservative, moderate, and aggressive. The four risk profile groups will have a different familiarity affect behavior because each

group has a different perspective on risk. Steinberg (2013) explains that risk preference will cause differences in behavior when making decisions involving profit and risk simultaneously. Likewise, in bullish and bearish conditions, this study reveals that the capital markets' condition will simultaneously lead to decisions involving profit and risk. This study argues that the familiarity effect, influenced by investors' physical and psychological closeness, will occur in bullish and bearish markets but with different tendencies.

H3A: The familiarity effect behavior occurs in bullish markets.

H3B: The familiarity effect behavior occurs in bearish markets.

H3C: The familiarity effect behavior differs among each investor's risk profile category.

Table of variable measurement

Number of Questions	Variable	Item
1	The gambler's fallacy (with positive sentences)	Liquidity requirements, i.e., having access to your funds
2	The halo effect (with negative sentences)	The desired rate of return
3	The familiarity effect (with positive sentences)	Attitude to risk
4	The halo effect (with positive sentences)	Concerns about taxation
5	The gambler's fallacy (with negative sentences)	Concerns about inflation
6	The familiarity effect (with negative sentences)	Investment experience
7	The halo effect (with positive sentences)	The volatility of your investment's rate of return
8	The gambler's fallacy (with positive sentences)	Investment preferences
9	The familiarity effect (with positive sentences)	Very conservative
10	the halo effect (with negative sentences)	Conservative
11	The familiarity effect (with negative sentences)	Moderate
12	The gambler's fallacy (with negative sentences)	Aggressive

Methods

This present study is quantitative research. The research data were obtained using a questionnaire consisting of 12 statements for behavioral bias and eight questions for the risk profile (the questionnaire is provided upon request). The 12 questions were the same questions used by Djojopranoto and Mahadwartha (2016), Wahyu and Rahayu (2017), and Metwally (2020), while the following eight questions were questions that revealed each investor's risk profile (Hunt, 2016). Twelve questions were classified into three groups of criteria: the gambler's fallacy, the halo effect, and the familiarity effect. The gambler's fallacy referred to making decisions based on a belief in the negative correlation of an uncorrelated random sequence. The halo effect referred to a tendency to make general perceptions and images based on specific characteristics when deciding something. Finally, the familiarity effect referred to making decisions based on preferences and beliefs about things that were familiar to the individual.

The risk profile questionnaire aimed to differentiate investors into four categories: very conservative, conservative, moderate, and aggressive. The risk profile questionnaire used eight questions: liquidity requirements, the desired rate of return, attitude to risk, concern about taxation (part of transaction costs), inflation, investment experience, the volatility of an investment, and investment preferences. The questionnaire's results showed the score of the respondent's profile, which was then classified into four categories: scores of 9 to 13 were classified as very conservative, 14 to 18 as conservative, 19 to 28 as moderate, and above 29 as aggressive.

The research's population consisted of capital market investors in Indonesia. The research sample was determined using a nonprobability sampling technique, known as purposive sampling. The respondents were investors who made transactions at least three times a week, transacted without direct broker assistance, and were actively trading in the past week. Respondents who filled out this questionnaire but did not meet the criteria were excluded from the sample. The questionnaire was distributed using online media, namely the capital markets' mailing list, the investor Line group, and the WhatsApp group.

The questionnaire had undergone face validity to measure the respondents' understanding of the questionnaire's statements and questions (Sekaran, 2015). Face validity was checked by distributing questionnaires to 12 random people. The 12 respondents agreed on the validity of the questionnaire's contents, as evidenced by the respondents' understanding of the questionnaire's items. The face validity test not only gave the respondents the questions but also allowed them to express their approval, or not, via a Likert scale. Data from the questionnaires were tested for validity and reliability before data processing. First, a qualitative calculation was exercised on a respondent's answer. The researchers then got data on the number (descriptive frequency) of respondents who an-

swered strongly disagree (1=positive sentences, 5=negative sentences), disagree (2=positive sentences, 4=negative sentences), neither agree nor disagree (3= positive sentences/ negative sentences), agree (4=positive sentences, 2=negative sentences) and strongly agree (5=positive sentences, 1=negative sentences) for each statement in the questionnaire. An overview of the gambler's fallacy, the halo effect, and the familiarity effect on the respondents could be seen when trading was carried out in bullish and bearish conditions.

Furthermore, a quantitative test was employed using the statistical method of one-tailed t-test and paired t-test. The researchers used a 5-point Likert scale for all the respondents' choices. The 1 to 5 point range offered a choice of agreeing or disagreeing with the respondents' statements, ranging from strongly disagree to strongly agree. These choices were given to each question in the questionnaire. The 5 point Likert scale was used because the data's distribution reflected the investors' choices or judgement, and the choice for Scale 3 also reflected investors' indecisive perceptions (Touny and Shusha, 2016). Scale 3 was used as a reference or comparison value because it was the middle value in the measurement range (Likert scale 1 to 5). If the mean value of the statement > 3.00 and the value of $t_{test\ statistics} > t_{critical}$, at $\alpha = 0.05$, it could be stated that behavioral bias occurred in the respondents. If the mean value of the statement < 3.00 and the value of $t_{test\ statistics} > t_{critical}$, at $\alpha = 0.05$, it could be concluded that the respondents did not experience behavioral bias. If the mean value of stat = 3, the value of $t_{test\ statistics} > t_{critical}$, at $\alpha=0.05$ was neutral. However, if the value of $t_{test\ statistics} < t_{critical}$, at $\alpha = 0.05$, the statement in the questionnaire or research instrument could not show the expected outcome.

Statements with positive sentences were given 1 for strongly disagree to 5 for strongly agree. Conversely, statements with negative sentences were given 1 for strongly agree to 5 for strongly disagree. The value obtained from each statement in the questionnaire was then tested for the mean difference using the one-tailed t-test to ensure that each statement's mean could show the expected outcome. The statements on the questionnaire were not only in a positive form but also in a negative form. This was done to get more accurate research results.

Table 1. Statistical Hypothesis Using One-Tailed t-Test

Capital Market Conditions	Gambler's Fallacy		Halo Effect		Familiarity Effect	
	Bullish	**Bearish**	**Bullish**	**Bearish**	**Bullish**	**Bearish**
Positive statement	$H_0: \mu_{1a} = 3$	$H_0: \mu_{1c} = 3$	$H_0: \mu_{2a} = 3$	$H_0: \mu_{2c} = 3$	$H_0: \mu_{3a} = 3$	$H_0: \mu_{3c} = 3$
	$H_A: \mu_{1a} \neq 3$	$H_A: \mu_{1c} \neq 3$	$H_A: \mu_{2a} \neq 3$	$H_A: \mu_{2c} \neq 3$	$H_A: \mu_{3a} \neq 3$	$H_A: \mu_{3c} \neq 3$
Negative statement	$H_0: \mu_{1b} = 3$	$H_0: \mu_{1d} = 3$	$H_0: \mu_{2b} = 3$	$H_0: \mu_{2d} = 3$	$H_0: \mu_{3b} = 3$	$H_0: \mu_{3d} = 3$
	$H_A: \mu_{1b} \neq 3$	$H_A: \mu_{1d} \neq 3$	$H_A: \mu_{2b} \neq 3$	$H_A: \mu_{2d} \neq 3$	$H_A: \mu_{3b} \neq 3$	$H_A: \mu_{3d} \neq 3$

The statistical hypotheses testing design in Table 1 showed that H0 was not signif-

icantly different from three. In contrast, Ha stated that the tested sample differed significantly from three. Therefore, the same criteria were applied to different market conditions to determine whether there was a behavioral bias based on the mean value of the statements of each variable.

The hypotheses testing method used in this study assumed that the gambler's fallacy, the halo effect, and the familiarity effect occurred or did not occur in bullish and/or bearish markets without classifying the investors based on the behavioral bias of the mean value of each variable's statements.

Previous research by Irshad and Badshah (2016) and Djojopranoto and Mahadwartha (2016) used a questionnaire instrument to measure behavioral bias when investing. However, the questionnaire was analyzed using a Likert scale. As a result, both studies did not classify investors by their behavioral bias based on the mean value of each variable's statements.

Additionally, the findings on the mean value of the statements were separated among investors according to the very conservative, conservative, moderate, and aggressive risk profile categories. Each category tested the mean value of each behavioral bias statement to find different behavioral biases based on the investor's risk profile. H0 and Ha would change with the addition of four tests per hypothesis.

Table 2. Paired T-Test with Positive and Negative Statements

Capital Market Conditions	Gambler's Fallacy	Halo Effect	Familiarity Effect
Bullish	H_0: $\mu_{positive} = \mu_{negative}$	H_0: $\mu_{positive} = \mu_{negative}$	H_0: $\mu_{positive} = \mu_{negative}$
	H_A: $\mu_{positive} \neq \mu_{negative}$	H_A: $\mu_{positive} \neq \mu_{negative}$	H_A: $\mu_{positive} \neq \mu_{negative}$
Bearish	H_0: $\mu_{positive} = \mu_{negative}$	H_0: $\mu_{positive} = \mu_{negative}$	H_0: $\mu_{positive} = \mu_{negative}$
	H_A: $\mu_{positive} \neq \mu_{negative}$	H_A: $\mu_{positive} \neq \mu_{negative}$	H_A: $\mu_{positive} \neq \mu_{negative}$

Statistical testing was continued using a paired t-test by comparing the value of the positive and negative statements of each variable for each risk profile category (Table 2). The objective was to determine the respondents' consistency in answering statements with different sentences (positive and negative). Suppose the value of $t_{test\ statistics} > t_{critical}$, at $\alpha = 0.05$, and it could be stated that there was a significant difference between positive and negative statements, which would indicate that the respondent was not consistent in answering the statements given. Conversely, if the value of $t_{test\ statistics} < t_{critical}$, at $\alpha=0.05$, it could be stated that there was no significant difference between the positive and negative statements, which indicated that the respondent was consistent in answering the statements given. H0 stated that the value of the positive statements was the same as the negative statements. Meanwhile, Ha stated that the value of positive statements differed from the negative ones. A paired t-test was exercised for each of the four risk profile categories.

Table 3. Paired T-Test between Bullish and Bearish

Gambler's Fallacy	*Hallo Effect*	*Familiarity Effect*
H_0: $\mu_{bullish} = \mu_{bearish}$	H_0: $\mu_{bullish} = \mu_{bearish}$	H_0: $\mu_{bullish} = \mu_{bearish}$
H_A: $\mu_{bullish} \neq \mu_{bearish}$	H_A: $\mu_{bullish} \neq \mu_{bearish}$	H_A: $\mu_{bullish} \neq \mu_{bearish}$

The paired t-test was also used to compare the value of the statement under bullish and bearish conditions (Table 3). Suppose $t_{test\ statistics} > t_{critical}$, at $\alpha = 0.05$, and it could be stated that there was a difference in the bullish and bearish markets, which would imply that the behavioral bias occurred in one of the capital markets' conditions (either bullish or bearish). If the value of $t_{test\ statistics} < t_{critical}$, at $\alpha = 0.05$, it could be stated that there was no difference in the bullish or bearish markets, which would imply that behavioral bias occurred equally in bullish and bearish conditions. H0 stated that the value of the statements in bullish markets was the same as in bearish ones. Meanwhile, Ha stated that the value of the statements in bullish markets was significantly different from that in bearish ones.

Results

Table 4 exhibits the results of the descriptive summary of all the related variables. Based on the findings in Table 4, all the statement indicators were significant, but the statement regarding the halo effect had an average of less than three and was significant. Indicators of more than 2.5 indicated a robust behavioral bias, and less than 2.5 indicated a weak one. The halo effect's indication did not occur in bullish or bearish conditions.

A valid and reliable questionnaire was distributed for 50 days (June 17 to August 16, 2019) to 956 respondents. After being selected according to the study's inclusion criteria, 843 respondents were obtained. In this study, 67% of the respondents were male, which aligned with Kumar et al. (2020), and showed that women were more likely to avoid risk than men in their financial perceptions and asset allocation decisions. Besides, Vries and Gerber (2017) stated that women were more cautious and sensitive than men.

During trading, one of the factors that influenced the investors' decision-making was their knowledge and understanding of the capital markets' conditions. The investors' experience in investing influenced their investment decision-making. The greater their investment experience was, the fewer factors they considered in their investment decisions.

When viewed from the trading experience based on the respondents' age groups, only respondents in the 20 to 30 age group were dominated by investors with only 1 to 3 years of trading experience. Meanwhile, other age groups, namely 31 to 40 years, 41 to 50 years, and > 50 years were dominated by investors with > 5 years of trading experience. When viewed from the total trading experience, regardless of the respondents' age group, 39% of the research's respondents had > 5 years of trading experience. Based on the risk

profile category, 843 respondents consisted of 253 (30%) respondents who were classified as very conservative; 261 respondents (31%) were conservative; 211 respondents (25%) were moderate, and 118 respondents (14%) were aggressive.

Table 4. One-Tailed T-Test of All Statement Items without Risk Profile

Behavioral Bias [a)]	**N**	***Mean***	***Std Deviation***	**t**	
GF Bullish Positive	843	4.09	1.296	9.574	***
GF Bullish Negative	843	3.95	1.219	7.961	***
GF Bearish Positive	843	3.52	1.164	6.542	***
GF Bearish Negative	843	3.45	1.121	5.322	***
HE Bullish Positive	843	2.25	1.243	-2.765	**
HE Bullish Negative	843	2.09	1.345	-2.789	***
HE Bearish Positive	843	2.21	1.121	-3.668	***
HE Bearish Negative	843	2.24	1.218	-2.318	**
FE Bullish Positive	843	3.96	1.457	4.849	***
FE Bullish Negative	843	3.87	1.321	6.593	***
FE Bearish Positive	843	3.75	1.458	3.943	***
FE Bearish Negative	843	3.41	1.362	3.754	**

[a)] GF: Gambler's Fallacy; HE: Halo Effect; FE: Familiarity Effect

*=significance at 10%, **= significance at 5%, ***= significance at 1%

Data analysis was continued with statistical testing using the one-tailed t-test method for the gambler's fallacy, the halo effect, and the familiarity effect without using risk profiles. As a result, the sig (2-tailed) value was generated by the 12 statements in the questionnaire < 0.05. Table 4 also answers the proposed research hypotheses: Ha was accepted, and H0 was rejected. This signified that the mean value of the 12 statements used in the questionnaire could show the expected outcome by dividing per statement, based on behavioral bias and sub-statements for a specific condition (bullish or bearish) with a positive or negative initial investment condition. Testing using a paired t-test between positive and negative statements on the three variables showed the sig (2-tailed) value of all the variables > 0.05. These results aligned with the research hypotheses; namely H0 was accepted, and Ha was rejected. The one-tailed t-test supported the respondents' consistency in answering the statements in the questionnaire.

Table 5. Paired T-Test between Bullish and Bearish Conditions without Risk Profile

Statement[a)]		**N**	**Mean**	**Std Deviation**	**Std Error Mean**	**t**	
Pair 1	GF_Bullish GF_Bearish	843	0.535	1.336	0.052	9.531	***
Pair 2	HE_Bullish HE_ Bearish	843	-0.055	1.035	-0.081	-0.581	

Pair 3	FE_Bullish FE_ Bearish	843	0.335	1.731	0.069	2.186	*

[a)] GF: Gambler's Fallacy; HE: Halo Effect; FE: Familiarity Effect
*=significance at 10%, **= significance at 5%, ***= significance at 1%

The results of the paired t-test in Table 5 show the allotment of pair groups 1 to 3 was based on the behavioral bias group, namely the gambler's fallacy, the halo effect, and the familiarity effect. The research findings showed a relatively significant and positive difference (that bullish was higher than bearish) in the gambler's fallacy and the familiarity effect. Moreover, it showed that the gambler's fallacy and the familiarity effect would differ in bullish and bearish markets. The gambler's fallacy and the familiarity effect were stronger in bullish than bearish markets because investors in bullish markets tended to lower their risk preferences and focused on better-understood stocks, rather than choosing all the available investment options. Meanwhile, the halo effect group had no difference in behavioral bias between bullish and bearish statements. This was probably because investors who were both bullish and bearish at the same time avoided making decisions based on a single piece of information that could affect their overall assessment of their investment.

Table 6. Respondents' Consistency Testing with Paired T-Test between Positive and Negative Statements for each behavioral bias without differences in Risk Profile

	Statement[a)]	**N**	**Mean**	**Std Deviation**	**Std Error Mean**	**t**	
Pair 1	GF_Bullish_Positive GF_Bullish_Negative	843	0.14	1.450	0.056	1.871	*
Pair 2	GF_Bearish_Positive GF_ Bearish_Negative	843	0.07	1.910	0.093	1.723	*
Pair 3	HE_ Bullish _Positive HE_ Bullish_Negative	843	0.16	1.590	0.088	0.571	
Pair 4	HE_ Bearish _Positive HE_ Bearish_Negative	843	-0.03	1.609	0.092	-0.628	
Pair 5	FE_ Bullish_Positive FE_ Bullish_Negative	843	0.09	1.340	0.085	-1.154	
Pair 6	FE_ Bearish_Positive FE_ Bearish_Negative	843	0.34	1.690	0.073	1.214	

[a)] GF: Gambler's Fallacy; HE: Halo Effect; FE: Familiarity Effect
*=significance at 10%, **= significance at 5%, ***= significance at 1%

Table 6 shows the paired t-test between the statements in bullish and bearish markets. In pairs 1 and 2, there was a significant mean difference between bullish and bearish markets for the gambler's fallacy. This was due to the gambler's fallacy affecting investment

decision-making during both bullish and bearish markets. In pairs 3 and 4, there was no significant difference between the halo effect in bullish and bearish markets for a positive or negative statement. The halo effect did not occur or affect the respondents' decisions in bullish or bearish markets. In pairs 4 and 5, the bullish and bearish markets in the two positive and negative statements were similar among the groups, indicating that the familiarity effect was similar even though the respondents were given a positive or negative statement in both bullish and bearish markets. Table 6 shows that the consistent behavioral bias that occurred in investors was the gambler's fallacy.

On very conservative, moderate, and aggressive risk profiles, the gambler's fallacy occurred in bullish markets rather than bearish ones (Table 7). These findings showed that moderate and aggressive risk profiles tended to encourage the gambler's fallacy in bullish markets because the investors' ability to earn high profits seemed more likely than in bearish ones. This argument supported the finding that a conservative risk profile in bearish markets will make investors take more risks.

Table 7. Paired T-Test on Bullish and Bearish on Gambler's Fallacy with Four Risk Profiles

Statement[a)]		N	Mean	Std Deviation	Std Error Mean	t	
Sub-Pair 1.1	VC_GF_Bullish VC_GF_Bearish	253	0.894	1.538	0.714	6.713	***
Sub-Pair 1.2	C_GF_Bullish C_GF_Bearish	261	-0.452	2.753	-0.811	-2.215	**
Sub-Pair 1.3	M_GF_Bullish M_GF_Bearish	211	0.463	1.821	0.161	2.562	*
Sub-Pair 1.4	A_GF_Bullish A_GF_Bearish	118	0.283	1.764	0.071	2.529	*

[a)]GF: Gambler's Fallacy; HE: Halo Effect; FE: Familiarity Effect; VC: Very conservative; C: Conservative; M: Moderate; A:Aggressive

*=significance at 10%, **= significance at 5%, ***= significance at 1%

Table 8 depicts the bias calculation of the halo effect in bullish and bearish markets by considering the four risk profile categories. With a balanced number of respondents in each risk profile category, the results showed that the significant difference per sub-pair group only occurred in sub-pair 2.1 for the very conservative risk profile. As for the other sub-pairs, the bullish and bearish markets were similar. The halo effect showed a weak tendency to occur. However, it could still prove that the conservative group in bullish markets tended to experience the halo effect compared to in bearish ones. In Table 4, the halo effect > 2.5 only occurred in bullish markets with positive statements, which partially supported

the findings in Table 8; namely, the risk profile was very conservative in bullish markets.

Table 8. Paired T-Test on Bullish and Bearish on Halo Effect with Four Risk Profiles

Statement[a)]		N	Mean	Std Deviation	Std Error Mean	t	
Sub- Pair 2.1	VC_HE_Bullish VC_HE_Bearish	253	0.832	1.482	0.023	2.411	**
Sub- Pair 2.2	C_HE_Bullish C_ HE_Bearish	261	-0.275	1.091	-0.064	-0.581	
Sub- Pair 2.3	M_ HE_Bullish M_ HE_Bearish	211	0.382	1.815	0.163	1.142	
Sub- Pair 2.4	A_ HE_Bullish A_ HE_Bearish	118	0.519	1.634	0.146	1.114	

[a)]GF: Gambler's Fallacy; HE: Halo Effect; FE: Familiarity Effect; VC: Very Conservative; C: Conservative; M; Moderate; A:Aggressive

*=significance at 10%, **= significance at 5%, ***= significance at 1%

The study's results for the familiarity effect in bullish and bearish markets for four risk profile categories are shown in Table 9. This study showed that the mean difference between bullish and bearish markets was positive, which indicated that the familiarity effect was more potent in bullish than bearish markets. The very conservative, conservative, and moderate categories had a wider difference between the bullish and bearish markets than the aggressive category. This indicated that the very conservative, conservative, and moderate categories tended to experience familiarity in bullish markets. At the same time, bullish and bearish differences were the lowest and most significant in the aggressive category. The aggressive category also experienced the familiarity effect. Still, the behavioral bias in bullish and bearish markets was not too wide, which indicated that aggressive investors tended to invest without considering bullish and bearish markets.

Table 9. Paired T-Test on Bullish and Bearish on Familiarity Effect with Four Risk Profiles

Statement[a)]		N	Mean	Std Deviation	Std Error Mean	t	
Sub- Pair 3.1	VC_FE_Bullish VC_FE_Bearish	253	0.982	1.837	0.052	4.531	***
Sub- Pair 3.2	C_FE_Bullish C_ FE_Bearish	261	0.812	1.231	-0.081	4.311	***
Sub- Pair 3.3	M_ FE_Bullish M_ FE_Bearish	211	0.732	1.726	0.034	2.486	**

Sub- Pair 3.4	A_ FE_Bullish A_ FE_Bearish	118	0.582	1.540	0.341	2.613	**

[a)]GF: Gambler's Fallacy; HE: Halo Effect; FE: Familiarity Effect; VC: Very Conservative; C: Conservative; M: Moderate; A:Aggressive

*=significance at 10%, **= significance at 5%, ***= significance at 1%

The present study showed novelties in its results, compared to the previous studies. First, the gambler's fallacy occurred when investors were in an uptrend but did not occur in a downtrend (Djojopranoto & Mahadwartha, 2016). However, the present study's findings showed that moderate and aggressive risk profiles tended to encourage the gambler's fallacy in bullish markets, because the investors' ability to earn high profits seemed more possible than in bearish ones. Second, investors did not experience the halo effect in uptrend and downtrend conditions (Djojopranoto & Mahadwartha, 2016). However, the present study's findings showed that investors partially experienced the halo effect when investing in bullish markets. Third, the familiarity effect occurred in uptrend and downtrend conditions. The familiarity effect was more significant when the capital markets' conditions experienced an uptrend. The present study's findings showed a relatively significant and positive difference (that bullish was higher than bearish) in the gambler's fallacy and the familiarity effect. This argument supported the theory that a conservative risk profile in bearish markets would cause investors to take more risks.

Discussion

The Gambler's Fallacy

The gambler's fallacy behavior occurred in investors who traded in bullish and bearish markets. However, in bearish markets, the behavioral bias score was 3.5, which was still higher than the threshold of 2.5. These results indicated that investor behavior was in line with the prospect theory, which states that when investors earn profits (in the gains domain), they tend to avoid risk (risk-averse) (Sawa, 2020). Conversely, when investors experience losses (in the loss domain), they tend to take risks (risk-seeking) (Gavrilakis & Floros, 2020). The results showed that the mean difference between the bullish and bearish bias for the gambler's fallacy behavior was the biggest among the behavioral biases. Investors will trade excessively in bullish rather than bearish markets because of the belief that there is a chance of earning higher profits (Tayyab et al., 2021; Wahyu & Rahayu, 2017). This study analyzed bullish markets as the gain domain. In the gambler's fallacy, transaction decision-making is based on the outcome of previous investment decisions (Bleaney, Bougheas, and Li, 2017). When investors have earned profits in the past few periods, they become increasingly risk-averse; this reduces their investment value per

transaction. As a result, investors believe that the probability of experiencing losses on the next transaction is higher, leading to the gambler's fallacy (Wijayanti et al.,2019).

On the other hand, bearish markets are analogous to the loss domain (Papadamouetal., 2021). When investors experience losses, they will increase their investments and hold them because they are more risk-seeking. This condition is in line with the prospect theory, in that investors will be many investment failure, which in this study is reflected by bearish markets (Gavrilakis & Floros, 2020; Sawa, 2020; Wahyu & Rahayu, 2017). Therefore, the gambler's fallacy occurs on a lower scale in bearish markets.

Moreover, the gambler's fallacy occurs in investors during their investment decision-making (Bleaney et al., 2017; Garcia-merino, Mayoral, Santos, & Vallelado, 2011; Wijayanti et al., 2019). During the transaction, investors focus more on the investment outcome than other information. As a result, the frequency of profits or losses experienced by investors significantly affects investors' risk-seeking behavior (Istanbul et al., 2019; Kumar et al., 2020). The more frequently profits are earned, the more significant the investment reduction, which causes bias in the decision-making.

The very conservative, moderate, and aggressive categories tend to experience the gambler's fallacy in bullish markets, rather than in bearish ones, when related to the risk profile. However the conservative category tends to experience the gambler's fallacy in bearish markets. This experience is because the conservative category tends to hold their undervalued investments in the hope of greater returns in the future (Wijayanti et al., 2019). However, the conservative and moderate categories tend to experience the gambler's fallacy in bullish markets. The lowest mean difference for the aggressive category indicates that this category's chances of experiencing the gambler's fallacy bias are lower than the other categories.

The Halo Effect

The halo effect on investors is caused by specific characteristics influencing investors' decision-making perceptions. For example, investors are often interested in buying stocks included in a liquidity index (in Indonesia, for instance, LQ-45) because they consider these stocks to produce high returns with a low liquidity risk. Investors are confident that investing in high intrinsic value companies will be more profitable in the short and long term. This belief is not necessarily correct when referring to anomalies in the capital markets. However, these liquidity characteristics make investors biased and they are reinforced by differences in the perceptions of liquidity aspects that may arise due to information asymmetry. According to Kumar et al. (2020), the halo effect can be eliminated by having experience, appropriate education, and investor objectivity.

In this study, the halo effect has a low impact on investors who transact in bullish

or bearish markets. It can be seen from all the mean values of the halo effect's statement scores, which were below 2.5. These findings showed that investors had sufficient experience and awareness to avoid the halo effect. In their research, Gong and Du (2020) state that the investors' awareness of the halo effect can significantly reduce this behavioral bias during transactions in the capital markets, both in bullish and bearish markets. This study argues that the halo effect will positively impact if public interpretation can be directed to a positive perception of the news or events. However, it will negatively impact if the public's interpretation of news and events does not have sufficient valid sources of information, from the investors' points of view. This argument is supported by Bretcu (2019), who asserts that business information is strongly influenced by the halo effect, especially in small industries that have high information asymmetry and low public interpretive ability toward the information.

The results of this study contradict Yustina and Gudono (2017) and Tuyon and Ahmad (2016) regarding the halo effect on investors. This study's results positively impact investors because they show that investors can make decisions rationally, mostly free from the halo effect's bias (Alp, Keung, Lau, & Kahyaoglu, 2020; Chang, Mcaleer, & Wang, 2020; Metwally, 2020). Investors can manage the information well and make decisions by evaluating it holistically. These findings also indicate that most investors in the capital markets have extensive trading experience and are educated. The findings are consistent, showing no difference for the halo effect in bullish and bearish markets, even given positive or negative statements.

Regarding the risk profile, the research findings showed that differences in the halo effect only occurred in the very conservative group, which was higher in bullish markets than in bearish ones. There was no difference in the halo effect in bullish and bearish markets on the other three risk profiles. The separation of the risk profile group is critical for the very conservative group (Leal, 2018), which supports the argument that the very conservative group is more likely to avoid losing money rather than trying to earn a profit (Dickason and Ferreira, 2016). Khalil et al. (2016) observe that very conservative investors experience mental accounting bias and loss aversion. Loss aversion is one of the halo effect's phenomena (Kahneman and Lovallo, 2011).

The Familiarity Effect

The familiarity effect occurred in investors who transacted in both bullish and/or bearish markets. This is in line with Gong and Du (2020), who state that individuals tend to have ambiguity aversion when faced with choices. Guenther, Johan, and Schweizer's (2018) study states that investors experience a familiarity effect when investing in their own country, rather than abroad. The familiarity effect's findings are robust for bullish and

bearish markets, with the mean value close to or above 3.5.

Investors prefer known or familiar things; for instance, investors feel more optimistic about the domestic than the international capital markets (Yustina & Gudono, 2017) because of their closeness to information and knowledge about the capital markets in their own countries. Language differences and institutional barriers are also why investors consider the international markets to be less attractive than the domestic ones (Hanna, 2018). The existence of international diversification will minimize risk and optimize portfolio returns (Liu, Park, and Sohn, 2018). Vries and Gerber (2017) explain that a false sense of familiarity may amplify an investor's reliance on a manager's guidance during the earning's game of investors and managers.

Bullish markets are believed to provide more significant profits, thus triggering a greater familiarity effect than bearish ones. Investors who experience the familiarity effect tend to concentrate their portfolios on the stocks they understand (X. Gong & Du, 2020), ignoring optimal portfolio diversification. Liu, Park, and Sohn's (2018) research shows optimal portfolio neglect because they scrutinized those investors with international portfolios during the 2007 to 2008 Asian crisis, to see how they could reduce the risk compared to domestic portfolios. However, the number of investors with domestic portfolios remains higher than those with international portfolios. This is due to several reasons, such as geographic proximity, professional closeness, and cultural patriotism. In line with the prospect theory, in bullish markets, investors tend to be more optimistic about the domestic capital markets and risk aversion (Hanna, 2018; Khalil et al., 2016; Madaan & Singh, 2019). Conversely, in bearish markets, investors tend to be more aggressive, which allows investors to take risks by buying international stocks or stocks that they have never known before, so that the familiarity effect that occurs is more minor (Leal, 2018; Wahyu & Rahayu, 2017; Wijayanti et al., 2019).

The findings regarding the risk profile groups of investors showed that the very conservative group experienced a higher familiarity effect than the conservative, moderate, and aggressive groups (Leal, 2018). Moreover, when sorted according to the mean difference between bullish and bearish markets, all the investor groups experienced a more substantial familiarity effect in bullish markets than in bearish ones (X. Gong & Du, 2020).

Conclusion

Based on this research's results, it can be concluded that the gambler's fallacy occurs in investors who transact in both bullish and bearish markets, with a higher magnitude in bullish ones. In bullish markets, the gambler's fallacy can be seen in investors who take advantage of short-term movements so that they act like gamblers. The halo effect

partially occurs in investors who invest in bullish rather than bearish markets. Some investors tend to take transaction positions in bullish markets; intelligent investors should take the opposite position to earn higher profits until the market reaches a saturation point.

Meanwhile, the familiarity effect occurs in investors who invest in bullish and bearish markets, with a more substantial magnitude in bullish than bearish. In bullish markets, investors feel familiar with the trend (familiarity effect), so it is likely to increase the number of transactions and give opportunities for other investors to take profits more quickly. Overall, the behavioral biases that occur in Indonesian investors are the gambler's fallacy and the familiarity effect.

Moreover, when markets are bullish, behavioral biases tend to occur. When markets are bullish, investors feel more confident and optimistic. The limited ability to process information triggers information asymmetry, which causes a representative bias characterized by the gambler's fallacy and the familiarity effect.

The present study has implications for investors' investment behavior in the capital markets, by proving that the capital markets' conditions are very influential when investing, especially in bullish markets. The bullish markets make investors biased when processing information, so they cannot make a rational analysis. This results in irrational behavior that drives market efficiency away. Apart from that, separating investor groups based on the risk profile also has practical implications. The very conservative investor group tends to consistently experience the gambler's fallacy and the familiarity effect biases, while the conservative group experiences the gambler's fallacy bias in bearish markets. When the capital markets' conditions experience an uptrend, investors will feel more confident and excessively optimistic; this is likely to trigger an information asymmetry. Information asymmetry causes representative bias characterized by the halo effect and the gambler's fallacy. This study provides a reference for investors and the capital markets in Indonesia because it has proved that investors tend to experience bias when processing information and cannot perform a rational analysis when trading in uptrend and downtrend conditions. This causes irrational behavior that can harm the investors' portfolios.

Limitation

This study only includes three behavioral biases: The gambler's fallacy, the halo effect, and the familiarity effect. Further research can be done by developing experimental methods and incorporating demographic elements, especially ethnicity, to determine the factors that cause behavioral bias. Adding more behavioral bias is also recommended for further research. Bias can be seen from two aspects: cognitive and emotional. These two

aspects easily cause bias or deviation when making decisions. The results of this study have implications for every investor with different investor risk profiles in both bullish and bearish market conditions in the Indonesian capital markets. Bias occurs when investors get and process information so that the analysis that is carried out is an irrational one, causing irrational behavior. This condition makes the market become more inefficient and has a negative impact on the portfolios created by investors previously. In addition, this study is also expected to provide an overview and become study material for future researchers to conduct more profound research into similar topics, to provide more benefits for the Indonesian capital markets. For future research, it is recommended to develop research into the representative patterns of investors' decision development, related to the Indonesian capital markets' cycles.