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REQUIRED RATE OF RETURN ON FINANCIAL INSTRUMENTS BY AN INDIVIDUAL INVESTOR IN THE CONTEXT OF BEHAVIOURAL FINANCE

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ABSTRACT

The purpose of the article. The main research objective of this work is to examine the occurrence of three heuristics among individual investors: overconfidence, loss aversion, and the disposition effect. The study aims to show the occurrence of these heuristics in a sample of investors.

Methodology. The study was conducted on a sample of 121 individual investors using an online survey based on scenario questions. The research method was selected based on the unique characteristics of behavioural finance. The research requires direct interaction with market participants, i.e., individual investors.

Results of the research. The research revealed the occurrence of two out of three examined heuristics. The analysis of the responses from the study participants led to the conclusion that emotions play a significant role in influencing decision-making processes in investor behaviour.

Keywords: behavioral finance, financial instruments, heuristics, perspective theory.

JEL Class: G1, G4, G41.

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Required Rate of Return on Financial Instruments by an Individual Investor in the Context of Behavioural Finance

Behavioural finance is one of the youngest and most dynamically developing trends in the field of finance. It questions investor rationality and, as the name suggests, analyses the behaviour of entities on financial markets. The basis of behavioural finance is prospect theory by Kahneman and Tversky (1979). Academic researchers consider investor behaviour based on observed heuristics, i.e., simplified decision-making rules that often lead to cognitive errors. Heuristics in the context of behavioral finance research play a key role in understanding how people make financial decisions in situations of uncertainty. They are simplified rules of thought that help in quick decision-making, but can lead to systematic cognitive errors. Heuristics help explain market anomalies and understand why investor behavior often deviates from the rational model of Homo Economicus. Studying these mechanisms contributes to better design of investment strategies and financial products that take into account human cognitive and emotional limitations.

The main research objective of this work is to examine the occurrence of three heuristics among individual investors: overconfidence, loss aversion, and the disposition effect. The study aims to show the occurrence of these heuristics in a sample of investors.

Review of the Literature

A trend in financial theory in recent years is behavioural finance. The behavioural concept of finance does not deny the validity of the classical theory of finance; rather, it questions the rationality of investor behaviour on the market. The behavioural approach to studying the behaviour of economic entities combines elements of economics and psychology. The need to develop this trend questioned the sufficiency of the economic result itself in investors' decisions, suggesting that psychological factors also determine the direction of action taken, pointing to the lack of rationality of market participants in their behaviour (Szyszka, 2009; Shanmuganathan, 2020).

The concept of behavioural finance is mainly based on Daniel Kahneman and Amos Tverky's (1979) prospect theory, which is a kind of continuation and development of the expected utility theory. Prospect theory, unlike Neumann and Morgenstern's normative theory, is descriptive, aiming to reflect and describe people's behaviour in conditions of risk. The two basic assumptions that make up prospect theory are utility and probability (Kulawik, 2023; Fishburn & Kochenberger, 1979). In the case of usability, Kahneman and Tversky (1992) replaced this concept with the concept of value. Decision-making takes place in two stages: editing and evaluation. The editing phase assigns the results to profits or losses. In the evaluation phase, the decision maker evaluates the value of each perspective and makes an appropriate decision. In the classic version of prospect theory, creators use random games in which a maximum of two non-zero outcomes are possible.

Heuristics are simplified rules for thinking or making decisions. They are a kind of mental shortcut that allows you to save time and intellectual effort in decision-making (Gigerenzer et al. 2022; Hjeij & Vilks, 2023). However, heuristics do not always lead to correct decisions because they are based on assumptions and simplifications, which can lead to errors (Khan et al., 2021).

One of the main heuristics in the field of behavioural finance is overconfidence bias, characterised by an excessive overestimation of one's knowledge, skills, and ability to predict future events. Investors influenced by this bias may be overly optimistic in assessing future events, anticipating profits from their investments despite the lack of a solid basis for such expectations. They may not consider risk when making decisions, incorrectly assess financial risk, or not understand the consequences of their actions (Kumar & Price, 2023; Ul Abdin et al., 2022; Naveed & Taib, 2021).

Excessive self-confidence can also encourage investors to frequently enter into transactions to undertake risky speculations (Kuranchie-Pong & Forson, 2022). Werner De Bondt (1998) conducted a study on a group of investors, asking them to predict the future quotations of the Dow Jones Industrial Average (DJIA) index for two- and four-week periods, providing extreme quotations representing the peak and the trough of the analysed period with a 90% probability. The results revealed that the index quotations were definitely "broader" than investors' predictions and differed, especially in the case of the four-week forecast. Consequently, he concluded that the strength of overconfidence is directly proportional to the length of the forecast period. Excessive self-confidence, particularly in one's skills and knowledge, manifests itself through incorrectly calibrating the probabilities associated with analysed events. The precision of events considered certain by the respondents is 85%, while for events considered impossible, the probability drops to 20% (Berthet, 2022).

Another implication in the area of investors' motivational tendencies is loss aversion. Loss aversion is one of the key elements of prospect theory (Merkle, 2020). It assumes that the value function is steeper for losses than for gains (Schmidt & Traub, 2002). This hypothesis was motivated by Kahneman and Tversky's discovery that the annoyance an investor experiences after suffering a loss seems to be greater than the pleasure derived from making a profit (Kahneman & Tversky, 1979).

Thaler (1980) extended the concept by suggesting that obtaining a good has a much lower valuation than losing it. He proposed loss aversion as an explanation for the holding effect, which he defined as the discrepancy between bid and loss prices (Thaler, 1980). He conducted an experiment during which he divided students into two groups. Each student in the first group received a coffee mug with the university logo, while students in the second group were left without mugs. The participants were then asked about the price of the mug – the students who owned the mug were asked about the selling price, while the other students were asked about its purchase price. There was a discrepancy between the proposed prices, as those who wanted to sell the mug proposed significantly higher prices than those who wanted to buy it (Cao et al., 2021; Goyal et al., 2023; Mamidala et al., 2023).

The disposition effect is a phenomenon that represents the tendency of investors to quickly sell rising assets and hold onto losing portfolio assets (Kaustia 2010; Shefrin & Statman, 1985). Research

based directly on data from individual investors' brokerage accounts showed the particular presence of this effect on small-cap companies (Andreu et al., 2020). From the behavioural finance perspective, this phenomenon can be explained as a consequence of the anchoring effect, that is, investors' excessive attachment to the price at which the security was purchased, as well as their excessive self-confidence and optimism, which confirms their belief in the temporary nature of an inappropriate valuation that is inconsistent with their expectations, thus preventing them from admitting their judgment was wrong (Haryanto et al., 2020; Zhang et al., 2022).

The second assumption of the disposition effect refers to the value function from the Kahneman and Tversky curve, which posits convexity in the area of losses and concavity in the area of profits. In other words, when investors have assets in their portfolio on which a profit can be made, they will be risk averse. Conversely, when the portfolio components only allow for the realisation of a loss, investors will be more inclined to take additional risks (Antony, 2020; Muralidhar and Berlik, 2017).

The three heuristics mentioned above are only a sample of what can be discussed today in the context of behavioural finance. Other beliefs and heuristics in the literature include the following:

- the availability heuristic, which assigns probability in direct proportion to its publicity, i.e. the probability is higher the more the event is known to the investor (Pachur et al., 2012; Salman et al., 2021);
- the representativeness heuristic, which involves making inferences on an insufficiently large sample (Ahmad et al., 2021; Khan et al., 2021);
- cognitive conservatism, i.e., there is insufficient consideration of the importance of new information due to a strong attachment to the previous state of knowledge (Sood et al., 2023; Hidayat and Moin, 2023).

Although classical finance theory and the behavioural approach are opposite trends, they do not have to be mutually exclusive; in fact, they can be complementary. The concept of behavioural finance can be used to predict the behaviour of investors, as a collective, in the market and to use divergent valuations to achieve their own benefits (Vasileiou, 2022).

Methodology and Identification of Significant Trends and Dependencies

The purpose of the study is to understand and examine the occurrence of behaviours and cognitive biases associated with behavioural finance heuristics, such as overconfidence, loss aversion, and the disposition effect. It also aims to identify their impact on investment decisions. The study was conducted on a sample of 121 individual investors using an online survey based on scenario questions. The research method was selected based on the unique characteristics of behavioural finance. The research requires direct interaction with market participants, i.e., individual investors. This method also made it possible to reach a wider audience than if a "paper" survey had been used. Data was collected between May 27 and June 30, 2023. The survey was published in investment groups, on social media,

and sent to the academic community. Table 1 contains a summary of data regarding education broken down by gender and age of respondents.

Table 1

Education by gender and age of respondents

	Basic education	Secondary education	Higher education	Sum
>55			9	9
Female			3	3
Male			6	6
18–25	3	18	27	48
Female	3	6	15	24
Male		12	12	24
26–35		6	24	30
Female		3	6	9
Male		3	18	21
36–45		7	15	22
Female		3	3	6
Male		4	12	16
46–55		3	9	12
Female		3		3
Male			9	9
Sum	3	34	84	121

Source: own calculations.

The general conclusions from the survey responses show that extreme values, both extremely low and high, make up a small portion of the responses to each question. Clearer trends emerge when grouping the responses. Thus, turning to the first question, a relatively small group of respondents claim that their investments will not exceed the rate of return on the WIG index. Twenty per cent of the people in the sample had a neutral approach to beating the market. However, all those who determined the probability of exceeding the market return are seen as being confident they would exceed the benchmark return rate. Additionally, in a supplementary question, those who would assign responsibility for the failure of their investments to external factors comprise the largest group (39%). In another question regarding overconfidence, up to 60% of respondents declared that they trade in shares based only on their own analyses. Similarly, 60% of respondents expected that the rates of return on their investment would exceed the average return on the stock market.

These trends reveal the presence of the heuristics of overconfidence and investor optimism. The tendency to overestimate knowledge and skills may, in this case, lead to losses on positions in a brokerage account.

Subsequent questions analysed investors' loss aversion, which involves excessive avoidance of losses rather than achieving profits. In the first question about the probability of keeping a losing stock in the portfolio while hoping for a change in the trend, the vast majority (55%) declared that it is highly probable that they would keep losing stocks in their portfolio. Thus, they are ready to bear the risk to

avoid a loss. This insight was supplemented by another question, which revealed the largest group of respondents (47%) would realise a loss in the event of a significant decline.

In the next question, the respondents encountered a scenario in which they have a profitable share in their portfolio, but the price has recently shown significant volatility. When asked about the probability of selling the shares and realising profits in order to avoid a potential loss, a minority of investors opted to continue holding the instruments, indicating a willingness to take risks in order to make a profit. Most participants (62%) would make a profit immediately. Therefore, in the next question, the respondents were asked at what potential decline they would decide to sell shares. In this case, a drop of 1–30% would be enough for 68% of the respondents, indicating that investors are not willing to take risks.

Those questions showed the occurrence of loss aversion among the respondents, who are to be satisfied with even a small profit just to avoid a loss. In the case of potential losses, they are not willing to close losing positions in order to realise a loss, but they are ready to take risks, i.e., to continue to hold losing positions in the hope that the market trend reverses.

The last set of questions concerned the disposition effect, which is somewhat related to loss aversion and involves holding losing positions and selling profitable positions. In order to examine the occurrence of this heuristic among the sample, two hypothetical factual situations were presented to the participants. The first had two assets in the portfolio, one profitable and the other loss-making. The participants were asked to rate the likelihood of selling winning stocks and keeping losing stocks. Forty-eight per cent of the respondents stated that they would be unlikely to sell profitable shares and keep losing shares. Twenty per cent remained neutral, and 32% would take the risk to reduce losses and sell profitable shares, thus leaving losing positions in the portfolio. The participants were asked at what minimum profit they would decide to sell the profitable shares. The dominant groups were people willing to sell their shares at a profit of 21–30% (25% of respondents) and 11–20% (22% of respondents).

The remaining two questions investigated the opposite scenario, i.e., selling loss-making shares and keeping profitable shares. Forty-two per cent of people said they were likely to get rid of losing positions and keep profitable ones. When asked about the minimum loss required to sell losing shares, they were also mostly unwilling to risk more than a 30% loss in the value of their position.

The questions that examined the disposition effect did not indicate its occurrence in the study group. This may be related to the fear and greed of the investors, which explains the reduction in losing positions and keeping the profitable ones.

Conclusions on Individual Investors' Investment Decision-Making

The research revealed the occurrence of two out of three examined heuristics. The analysis of the responses from the study participants led to the conclusion that emotions play a significant role in

influencing decision-making processes in investor behaviour. However, not all heuristics were noticed in every sample. This variability may be related to many factors, both external (e.g., the current macroeconomic situation) and internal (e.g., the dominance of rational investors in the sample, perhaps the dominance of specific personality types). The study confirmed the lack of rationality in certain aspects of decision-making in financial markets. In conditions of uncertainty, investors make decisions chaotically and tend to take risks to avoid losses rather than to achieve profits. They overestimate their competencies when making decisions in investment processes, exposing themselves to potential losses.

When considering financial and behavioural factors, the required rate of return for an individual investor becomes a multidimensional challenge. Traditional financial models assume that investors act rationally, minimise risk, and maximise profit. However, behavioural finance reminds us that people frequently deviate from this abstract ideal. They often act under the influence of emotions, cognitive biases, and heuristics, which influence their risk assessment and expectations regarding the return on investment (Cao et al., 2021; Iramani and Lutfi, 2021; Mamidala et al., 2023).

From this perspective, the required rate of return becomes a more flexible and individual concept. What investors expect can be shaped by their personality traits, life experiences, financial goals, and level of risk tolerance. Furthermore, the level of excessive optimism, loss aversion, and disposition effect influences the perception of risk and reward, which in turn influences the determination of the required rate of return (Zhang et al., 2022; Salman et al., 2021).

Appropriate financial advice and portfolio management that consider both financial and behavioural aspects are necessary. Individual investors should be aware of their own behaviours and susceptibility to cognitive biases to make more rational and informed financial decisions. Techniques such as financial education, financial planning, and investment advice can help manage the impact of behavioural factors on the investment process.

In the context of behavioural finance, the required rate of return is not just a mathematical number but also a reflection of the investor's psychology and emotions. Understanding these aspects is crucial to achieving investment success and achieving long-term financial goals.

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