

AN EMPIRICAL INVESTIGATION ON INVESTOR PSYCHOLOGICAL BIASES

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Abstract

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The main aim of this paper is to investigate the impact of behavioral biases on the decisions of Jordanian investors. This empirical study investigated the impact of six behavioral finance biases and their impact on Jordanian investors' financial decisions in the Amman Stock Exchange (ASE). Specifically, this paper empirically examines the impact of cognitive and emotional biases such as overconfidence, representation, availability, loss aversion, anchoring and regret aversion on investors' financial decisions. Following Chaffai and Medhioub's (2014) methodology, the paper applied the questionnaire-based approach and managed to collect 693 responses out of 2000 questionnaires (34.65 percent response rate) during the last five years. The main result achieved is that Jordanian investors take their decisions by falling for three main biases such as overconfidence, loss aversion, and anchoring. Jordanian investors believe that their decisions will lead to positive gains even if they are not based on highly developed models that can be used to direct investment strategies.

Keywords: Behavioral Finance, Psychological Bias, Amman Stock Exchange

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1. INTRODUCTION

Rational decision-making consists of a process that is both structured and reasonable. Making rational decisions can aid the decision-maker by improving the openness and specification of the knowledge-based choice. The basis of the theory of rational choice begins with a set of alternatives that the decision-maker needs to take into consideration. Analysts have focused on a narrow set of alternatives that are believed to contain important or interesting alternatives. For the most part, this is important because the full scope of possible activities surpasses understanding.

According to Kartini and Nahda (2021), if the same information is received by different

investors, then they will have different interpretations of this information. These different interpretations will prompt diverse impressions of the signs and accordingly lead to diverse patterns of behavior. The set of different behaviors will impact the monetary markets through the decisions of these financial specialists. Since they interpret the received data independently, every financial specialist will settle on a different decision. Thus, behavioral factors are imperative in monetary markets as they impact the speculators who settle on money-related choices. In this regard, Spaniol and Bayen (2005) suggested that cognitive skills of investors are seen as another barrier to individuals' financial decisions.

Furthermore, Sha and Ismail (2021) investigated the impact of uncertainty in decision-

making on the behavior of individuals and found that individuals behave in an untraditional manner when decisions are made under uncertainty. Since investors do not always behave as anticipated in traditional models, it is expected that there are many behavioral factors that affect monetary markets.

The productive markets speculation proposes that data is quickly coordinated into stock prices. Models of the 1970s connected monetary essentials with theoretical resource cost through levelheaded desires. In any case, amid the 1980s behavioral money scholars contended that behavioral/psychological factors assume a noteworthy job in clarifying financial specialists' choices and resource costs. Grossman and Stiglitz (1980) contributed significantly to price patterns by reviewing the overreaction of prices to new information. Advocators of rational expectations theory and efficient markets hypothesis have stated that there is no substantial statistical proof concerning the over- and underreactions of the stock process. Moreover, they suggested that well-functioning markets are usually characterized as being efficient (Fama, 1991).

Previous studies have found that the economy of a country influences stock markets in a noticeable manner and vice versa. Fama (1998) reported that investors are unable to achieve consistently high (abnormal) returns from trading in developed financial markets. Additionally, a booming stock market positively influences the growth and development of a country. As a result, investment decisions in the stock market are fundamental contributors to the growth or decline of the economy (Holden & Tilahun, 2022).

This research examines the impact of behavioral biases on investor decisions at the Amman Stock Exchange (ASE). Behavioral biases include both cognitive biases and emotional biases. Despite decades of research in finance, behavioral finance research has remained scarce in developing countries. The study provides a basis for exploring the role of behavioral/psychological factors on investor decisions in the context of Jordan.

The structure of this paper is as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used to conduct our research. Section 4 analyses the results while Section 5 provides the conclusion of this paper.

2. LITERATURE REVIEW

Associating psychology with finance, i.e., behavioral finance, has become an important topic since the emergence of the tech stock bubble in March 2000 (Fitri & Cahyaningdyah, 2021). Behavioral finance can be defined as an analytical examination of market inefficiency using theories of psychology. Individuals usually make mistakes and use assumptions that are not sensible when making financial decisions. Accordingly, behavioral finance has become an important topic in finance as it supports the traditional theories of finance by focusing on behavioral factors that influence decision-making (Gavrilakis & Floros, 2022).

Behavioral finance addresses two topics. The first topic is *behavioral finance micro* (BFMI),

which tests the conduct or inclination of the individual financial specialists that recognizes them from rational individuals as in classical economic theory. The second topic is *behavioral finance macro* (BFMA), which distinguishes and portrays abnormality in the efficient market hypothesis depicted in the behavior model (Jahanzeb & S.-ur-R., 2012). This study focuses on BFMI by studying the behavior of individual investors in order to identify psychological and cognitive biases as well as investigate the behavior of asset allocation to suppress biases in the investment process (Salman et al., 2021).

Several researchers have investigated the area of behavioral finance over the years, but with varied findings (Ritter, 2003). For example, Chaudhary (2013) examined the irrational financial decisions of investors in the domain of behavioral finance and found that emotional and cognitive factors have a strong impact on investors' decision-making process. He identified loss aversion, overconfidence, anchoring, over- and underreaction and herd behavior as some of the factors that influenced the investors' decisions (Chaudhary, 2013).

Pennings and Gracia (2010) also examined the effect of psychological and behavioral factors on investors' decision-making process. The researchers found retail investors generally avoided making rational decisions and based their decisions on behavioral factors such as mental accounting, cognitive dissonance, anchoring, greed, fear and heuristics. In addition, a study conducted in Tunisia by Chaffai and Medhioub (2014) found that the investment decisions of small investors depended mostly on their behavioral biases and market efficiency.

Behavioral finance has proposed a different angle for making investment decisions, which has become something common in the capital market. Evidence of this can be seen in the financial crises of 2008, as investors suffered due to their behavioral actions (Adam, 2010). Similarly, surveys on the topic of behavioral finance reported that agents can be irrational since their investment decisions can be influenced by behavioral factors/biases including, overconfidence, sentiments and overreaction (Seligman et al., 2009). Gervais and Odean (2001) and Odean (1999) also suggested that vulnerable investors are behaviorally biased in terms of self-attribution and overconfidence, and have developed a theoretical model to explain this. Thus, inaccurate investment decisions are the result of investors' lack of skills and overconfidence. The findings of these studies fall in line with the findings of past studies that suggested that investors' behaviors including disposition effect, overconfidence and misguided beliefs have led them to incur heavy losses in their stock investments (Odean, 1999).

Furthermore, it has been indicated that women are likely to make more profits in the stock market compared to men since the overconfidence of men leads to making impulsive decisions. Grinblatt and Keloharju (2000) also found in their study that the overconfidence of investors and their attitude toward risk are major determinants of their investment behavior.

Based on the previous literature, the prospect theory is an interesting theory that might explain the behavior of different researchers. The rationale

behind the prospect theory is that individuals base their decisions on potential losses or gains rather than the outcome. Kahneman and Tversky (1979) developed the prospect theory after criticizing the expected utility theory as a descriptive model of decision-making under risk. Decision weights are generally lower than the corresponding probabilities, except for the range of low probabilities. Moreover, people generally overlook components that are common with all prospects under consideration. This is called the isolation effect and leads to inconsistent preferences when the same choice is presented in different forms. Thaler (1999) stated that loss aversion has two-side effects. First, if investors evaluate their investments less often, they will accept more risk. Second, when all payoffs increase enough to remove losses, investors will accept more risk.

Based on the previous literature, the following hypotheses were formulated and empirically tested in the study:

H1: Overconfidence has a positive impact on investor decisions.

H2: Representativeness has a positive impact on investor decisions.

H3: Availability has a positive impact on investor decisions.

H4: Loss aversion has a positive impact on investor decisions.

H5: Anchoring has a positive impact on investor decisions.

H6: Regret aversion has a positive impact on investor decisions.

3. METHODOLOGY

3.1. Sample used

The study examined the impact of behavioral biases (i.e., cognitive and emotional biases) on investor decisions at the ASE. Cognitive biases include anchoring, representativeness, mental accounting and availability. Emotional biases include loss aversion, overconfidence and regret aversion. The data was collected through a pre-tested questionnaire which was adapted from Chaffai and Medhioub (2014). The constructs for behavioral biases (i.e., cognitive and emotional biases) and investor decisions were based on the 5-point Likert scale. This study distributed 2000 questionnaires to different Jordanian investors during the last five years. The final sample used is 693 responses from the ASE to examine the impact of behavioral biases on investor decisions (a response rate of 34.65%).

3.2. Developing the different biases based on previous literature

Successful investments rely on the presence of two factors, determination of psychological biases and financial knowledge needed for reducing those biases (Jureviciene & Jermakova, 2012; Salman et al., 2021). The odds of making a decision without any biases are minimal, but knowing the biases in addition to investment policies can aid in reducing these biases (Ramiah et al., 2016). Kahneman and Tversky (1979) also stated that mistakes in analyzing the situation in terms of probability and economic analysis can also be seen as a form of bias

that individuals fall into. After reviewing the literature, the most common biases listed are summarized below. Representativeness heuristic demonstrates that people relate probabilities and similarities together by disregarding fundamental data (Sloman & Lagnado, 2003). Representativeness bias is identified by assessments conducted by people based on the similarities of one case with another (Guercini & Milanesi, 2020).

Availability is a judgmental heuristic (Ogunlusi & Obademi, 2021). This bias is identified with the acknowledgment recurrence of cases. Along these lines, it implies that people attribute the acknowledgment recurrence of a case to the occurrence rate of that case, to accessible and evocable models or cases (Mahapatra & Mishra, 2020). Anchoring heuristic came about due to the increased access provided to individuals to different information. When the information available increases to a large extent, it becomes difficult for the human brain to make decisions (Fitri & Cahyaningdyah, 2021).

Accordingly, individuals have started to anchor due to uncertainty and lack of knowledge or aversion, which suggests that they are trying to avoid uncertainty. On the off chance that individuals have lacking information, they focus on that when they are faced with the primary information to lessen uncertainty; since this will diminish uncertainty and soothe the brain of the individual (Rashid et al., 2022).

Overconfidence is a preposterous conviction of a person in his/her mind, instincts and choices. Overconfidence arises from the way that people think of themselves as cleverer than they are or feel that they have better knowledge (Barno et al., 2020). In other words, overconfidence refers to the difference between the actual knowledge possessed by individuals and the knowledge they believe they have (Cao et al., 2021). Studies have indicated that overoptimism and overconfidence are related, but include other psychological biases. Optimism is seen as the belief that the outcomes of actions will be favorable. Overoptimism, on the other hand, follows overconfidence in that individuals believe that future events will be really better (Ahmed et al., 2020).

Regret aversion is viewed as overconcentrating on regret felt when a terrible choice is made. Inconvenience felt because of a slip-up is disproportionate to the measurement and nature of the slip-up. Fear of regret assumes a critical job in venture choices. Indeed, even this makes money-related choices postponed. Regret aversion in the stock exchange shows itself as keeping stocks which are lost amid quite a while regardless of whether there is no expectation (Borsboom & Zeisberger, 2020).

Herd effect is the way that a group of financial specialists exchanges a similar bearing for a period. In the herd effect, people who are insensible, uneducated and emotional are referenced in a similar class (Muhammad & Abdullah, 2009). The main reason for showing herd behavior relates to the different personalities of people. Investors inclined to show herd behavior for the most part have low self-confidence. They take into consideration the signs in the market and advantage of the choices of expert speculators so as to expand

their proficient capabilities in their venture choices (Khan et al., 2021).

Risk is a well-known factor affecting the financial decisions of individual investors. Prabhakaran and Karthika (2011) stated that financial risk tolerance is the readiness of individuals to settle on a financial decision when uncertainty reaches its highest levels. To put it differently, risk tolerance is a complex mental actuality that mirrors the demeanor of individuals against risk (Ahmad & Shah, 2022).

As per Roszkowski and Davey (2010), risk tolerance has both a steady and a variable trademark. It either continues as before like the blood gathering of an individual or changes like the state of mind of an individual. Hence, it might be vain to ground a venture plan as indicated by this trait. Individuals having high risk tolerance acknowledge variable, changeable occasions, while individuals who have low risk tolerance incline toward certainty (Ackert et al., 2010). It is not adequate to know just the risk tolerance of an individual as individuals have other estimating angles, for example, his/her propensity to heading of risk (Babajide & Adetiloye, 2012).

4. RESULTS AND ANALYSIS

Respondents were requested to submit socioeconomic information such as their age, gender, academic qualifications, knowledge and

experience. Individual investors' socioeconomic backgrounds are described in the following Table 1. As shown in Table 1, 69.7% of our respondents are male and the age revealed that 26.8% of our respondents are between 26-35 years old. In addition, half of the people who filled in the questionnaire hold undergraduate level (BA). Also, an interesting point revealed by Table 1 is that 39.4% have less than 2 years of experience in trading.

One limitation that can be drawn based on the following table is that since the male ratio is higher than females (69.7% more than 30.3%) then this restricts to a certain limit the results of this study. In other words, we expect the results to be more applicable to males than females. In addition, the results apply to individual investors in the Jordanian market, therefore, we cannot generalize the results to other markets unless we compare the results to other markets, and this can be a recommendation for future research.

Furthermore, Table 1 shows that most of the respondents have got experience and knowledge regarding investment in the Jordanian market, this implies that most investors highly depend on understanding the market and expect the market movement based on previous historical cases not based on academic models that can be applied as suggested in different financial theories (compare theoretical evaluation to current market prices and then determine the investment policy).

Table 1. Descriptive statistics

No.	Factor	Class	Frequency	Percent %	Cumulative frequency	Cumulative percent %
1	Age	26-35 years old	186	26.8	186	26.8
		36-45 years old	351	50.7	537	77.5
		above 45 years old	156	22.5	693	100.0
		Total	693	100.0		
2	Gender	Male	483	69.7	483	69.7
		Female	210	30.3	693	100
		Total	693	100.0		
3	Academic qualification	Bachelor	359	51.8	359	51.8
		Master	294	42.4	653	94.2
		PhD	40	5.8	693	100
		Total	693	100		
4	Knowledge	Academic	265	38.2	265	38.2
		Experience	308	44.5	573	82.7
		Both	120	17.3	693	100
		Total	693	100		
5	Experience	Less than 2 years	273	39.4	273	39.4
		2-5 years	168	24.2	441	63.6
		5-10 years	172	24.8	613	88.4
		10 and more	80	11.6	693	100
		Total	693	100		

Table 2. The percentages of the possible biases in our sample

Possible biases	Frequency
Loss aversion	32%
Anchoring	30.5%
Representativeness	27.8%
Availability	28.7%
Overconfidence	37.8%
Regret aversion	28.55%

Table 2 shows that the significant bias that affects the decision of investors in the ASE is overconfidence with a percentage of 37.8%. This indicates that investors are overconfident when making a decision regarding the type of investment

(securities) to invest in. In addition, 32% of Jordanian investors try their best to recover their losses even if the indicators and information available in the market show that the security will keep going down in prices.

Moreover, 30.5% of investors in the ASE are affected by anchoring. This suggests that they highly depend on the first information they get in the market or any information available right now while making their financial decisions. Then, 28.7% of Jordanian investors in the ASE take their financial decisions based on what they think at the moment of decision-making rather than the actual results of their financial modeling analysis they applied to help in determining if the security is underpriced or overpriced.

Furthermore, regret aversion has been affecting Jordanian investors by 28.55% as one of the biases. In other words, 28.55% of Jordanian investors in our sample might take a financial decision to invest or not in a security just not to regret the other alternatives decision in the future. Finally, representativeness is a processing error of available information that Jordanian investors do when they take financial decisions. Specifically, 27.8% face the representativeness bias as in they get affected by similar cases that the same result will occur again but this is not realistic, therefore such bias affects the decision-making negatively.

5. CONCLUSION

Behavioral finance is one of the most interesting topics to be researched in finance. Traditional financial theories suggest that investors are rational in nature but behavioral finance contradicted this view and highlighted several biases that can affect the decisions taken by investors as irrational. Mispricing of securities in the stock market is caused by behavioral biases in a predictable manner. The purpose of this study is to examine the effect of behavioral biases on investors' decisions in the ASE. Traditional financial theories claim that investors make rational judgments based on all available information in the market, while financial behavioral

theory challenges this notion, citing psychological aspects and their impact on trading decision-making. This empirical paper examined the impact of six financial behavior biases on the decision-making of Jordanian investors in ASE, namely overconfidence, representativeness, loss aversion, availability, anchoring and regret aversion. The paper concluded that Jordanian investors admit to taking their decision overconfidently and this has been documented by 37.8% of our sample.

This empirical paper adds and fills in the gap in the literature on behavioral finance, specifically the Jordanian market. In specific, this paper investigated the impact of behavioral biases on individual investors, therefore, the results apply just to individuals but not investment companies. In addition, Kross et al. (2009) argued that one of the major limitations of primary data is response bias. Thus, although this empirical paper chose a large sample in order to get a good response rate and be able to generalize the results for individual investors, we still cannot guarantee that the respondents provided honest answers to our questions. Lastly, for future research, it is highly important to investigate the impact of investor psychological biases on other markets and check the different results if any in order to examine the factors that might affect the decisions of investors.

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