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INVESTOR EXPERTISE AND THE RATIONALITY OF DECISION MAKING

Abstract. The aim of the paper is to explore the determinants of the rationality in decision making among Polish stock market investors with different levels of expertise with investing. Rationality in decision making was defined from the behavioral finance point of view and was operationalized as the frequency of some behavioral biases (see: the certainty effect) within the decision-making process. In particular, this study aims to investigate the degree of susceptibility to the certainty effect among people of various levels of expertise with investing. As there is still a lack of data studies in behavioral finance literature investigating the issues mentioned in this article (or existing results are ambiguous) we treated our study as an exploratory research.

Key words: investor expertise, behavioral bias, rationality, behavioral finance.

1. INTRODUCTION

There is an extraordinary amount of literature on behavioral finance dedicated to showing that the *homo oeconomicus* assumption from neoclassical finance theory [cf. Markowitz 1952; Fama 1970, 1991] does not depict correctly the true behavior of an investor on the stock market [cf. e.g., Akerlof and Schiller 2009; De Bondt and Thaler 1987; Kahneman 2012]. Many of the above-mentioned authors, representing the behavioral finance point of view, showed that investors have restrained cognitive possibilities, are controlled by emotions, and display mob mentality while making investment decisions. In other words, while making decisions, investors are susceptible to so-called behavioral biases, which disrupt the rationality of the process of making investment decisions and

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contribute to inefficient market reactions to information and, as a result, to asset mispricing [Camerer and Loewenstein 2003].

Szyszka [2010] proposed the Generalized Behavioral Asset Pricing Model, which shows how asset prices can be influenced by particular behavioral biases and how prices may deviate from fundamental values due to an investors' irrational behavior. The model distinguishes three behavioral variables that are linked to errors in understanding and transforming information signals, problems with representativeness and probability judgement, and unstable preferences. In our study, we wanted to investigate one example of behavioral bias that is captured by this model: the certainty effect.

Kahneman and Tversky in prospect theory showed many anomalies in how individual preferences are shaped in situations of uncertainty and risk [e.g., 1973, 1979, 1984]. One of them is the certainty effect: the tendency to give excessive weight to outcomes that are certain compared to outcomes that are highly probable. For example, Kahneman [2012] noted that a vast majority of participants prefer the certainty of winning \$850 to a 90% probability of winning \$1000, although the expected value of the latter option is actually higher. Overweighting a certain win over a highly probable option, as in the example above, prompts people to behave in riskier ways (choosing an option with a lower expected value).

Many studies have shown that expertise or professional experience sometimes helps in making good decisions, but equally often experts, aware of their knowledge within a given domain, can be susceptible to various behavioral biases, sometimes even more so than lay people [Braun and Yaniv 1992; Krems and Zierer 1994; Stephen and Kiel 2006]. Some authors have analyzed cognitive and emotional biases among professional investors compared to individuals who engage in the capital market on a more casual basis, or even compared to utter novices [e.g., Camerer and Johnson 1997; Tyszka and Zielonka 2002]. The results of these studies show that extensive investment expertise does not protect people from behavioral biases. Professional investors very often fall back onto schemas and/or heuristics, instead of fully processing the information and solving the problem.

1.1. Purpose and Hypothesis

The aim of the paper is to explore the determinants of rationality in decision making among Polish stock market investors with different level of expertise of investing. Rationality in decision making was defined from the behavioral finance point of view and was operationalized as the frequency of some behavioral biases (see: the certainty effect) within the decision making process. In particular, this study aims to investigate the degree of susceptibility to the certainty effect among people of various levels of expertise of investing.

As there is still a lack of data studies in behavioral finance literature investigating the issues mentioned in this article (or existing results are ambiguous), we treated our study as exploratory research. Therefore, the following, non-directional hypothesis was tested:

1. The degree of susceptibility to the certainty effect in decision making varies depending on the amount of expertise an individual has in stock market investing.

2. METHOD

2.1. Participants and Procedure

This study was conducted on a convenience sample. 270 participants divided into three, 90-person groups, which differ in the level of expertise of stock market investing. The first group was 90 professional investors, working in BGŻ Brokerage House in Warsaw, BRE Investment House in Warsaw and IDMSA Brokerage House in Cracow. The second group was 90 retail investors at the Warsaw Stock Exchange, who had only casual experience in investing on the Warsaw Stock Exchange. These participants were recruited from among attendees of the conference organized by the Association of Individual Investors, and from among trainees of specialized advanced workshops organized by PERK, an organization that educates people about capital markets in Warsaw. The last group was made up of 90 psychology students from the Faculty of Psychology at the University of Finance and Management in Warsaw. These participants had no experience in investing and were a control group in our study. Participant's basic demographic information is presented in Table 1.

Table 1. Participants' basic demographic information

Group	Gender	Age	Education
1. Professional investors (<i>n</i> = 90)	Men 49	<i>M</i> = 35.18	Elementary 0
	Women 41	<i>SD</i> = 7.13	Secondary 5
			Higher 85
2. Retail investors (<i>n</i> = 90)	Men 42	<i>M</i> = 26.34	Elementary 0
	Women 48	<i>SD</i> = 8.08	Secondary 38
			Higher 52
3. Psychology students (<i>n</i> = 90)	Men 23	<i>M</i> = 22.14	Elementary 0
	Women 67	<i>SD</i> = 5.76	Secondary 82
			Higher 8

Source: own calculations.

In this study we conducted a laboratory experiment, which allowed us to isolate behavioral bias and to investigate its influence on investor behavior. A questionnaire was delivered to the participants in person, so as to discuss the main goals of the research, inform them about the anonymity and confidentiality of individual results, and provide them with all the necessary explanations in order to eliminate possible mistakes in the completion of the questionnaires. Participants filled out the questionnaires in Polish and the study response rate was 62%.

2.2. Materials

In the research questionnaire participants filled out one situational scenario, in which they had to choose how they would behave in a hypothetical situation, where they were faced with a number of options. This scenario was adapted from Kahneman and Tversky [1979], where propensity towards the certainty effect was measured. The questionnaire also asked about demographics, including gender, age and education.

3. RESULTS

Statistical analyses was conducted using PASW Statistics 21 [SPSS Inc. 2012]. In order to test the hypothesis concerning the link between expertise of investing and the degree or rationality of decision-making, as measured through the behavioral bias contained in the exercise, a χ^2 test of the independence of two variables was conducted. One variable was the group of participants (professional investors vs. retail investors vs. psychology students); the other variable was making a rational or irrational decision in the exercise measuring the certainty effect (see: Appendices). For a rational answer (one that showed no behavioral bias) a participant received 1 point. For an irrational answer (one that showed bias) the participant received no points. In the exercise in the questionnaire, option A was considered the rational answer in the first part, while option C was considered rational in the second part (see: Appendices). These options had the greatest expected value. Other choices had lower expected values, so were coded as irrational. The results are shown in Table 2.

In the case of the comparison between professional investors and retail investors, a significant χ^2 result allows us to reject the null hypothesis about the independence of the two variables and to accept the alternative hypothesis, that the two variables are somehow related. In the case of the certainty effect, the group of retail investors behaved significantly more rationally (32 rational answers) than did the group of professional investors (19 rational answers), $\chi^2(1, N = 270) = 4.62; p < .05$. Professionals, thus, were shown to be more susceptible to the certainty effect than retail investors.

Table 2. Outcome of the χ^2 test for frequency of rational answers of professional investors, retail investors and psychology students in the exercise measuring susceptibility to the certainty effect

Participants	The certainty effect			
	Number of rational answers	χ^2	Df	<i>P</i>
Professional investors vs. Retail investors	19 32	4.62	1	0.032
Professional investors vs. Psychology students	19 15	0.58	1	0.446
Retail investors vs. Psychology students	32 15	8.32	1	0.004

Source: own calculations.

When it comes to comparison between professional investors and psychology students, the difference in answers measuring the susceptibility to the certainty effect between these two groups was not significant, $\chi^2(1, N = 270) = .58$; *ns*.

Finally, a significant χ^2 result allows us to reject the null hypothesis about the independence of the two variables and to accept the alternative hypothesis about the independence of the two variables, that the two variables are somehow related. In the case of the certainty effect, retail investors (32 rational answers) behaved in a more rational way than did psychology students (15 rational answers), $\chi^2(1, N = 270) = 8.32$; $p < .01$. This allows for a preliminary conclusion that psychology students were more susceptible to the certainty effect than retail investors.

4. DISCUSSION

Statistical analyses demonstrated that susceptibility to behavioral biases depends on the level of expertise in stock market investing. In particular, professional investors were not only susceptible to the certainty effect while making decisions, but the degree of susceptibility was even stronger in this group than among those who were only casually engaged in investing (retail investors; see: Tables 2). Interestingly, there were no statistically significant differences between professionals and naïve individuals (see: psychology students), who had no experience in investing.

Professional investors chose the certain, smaller profit, though the alternative would have given them a greater expected (though uncertain) gain. This behavior contradicts classic models of preference in finance theory, e.g., the expected utility hypothesis [von Neumann and Morgenstern 1944], according to which a rational being will seek to maximize expected utility, and so will choose a basket of goods whose expected utility is the greatest.

These findings are also in line with earlier studies indicating that experts are susceptible to behavioral biases [e.g. Braun and Yaniv 1992; Stephen and Kiel 2006]. There are studies that confirmed that the tendency to display behavioral biases is a highly automatized process, and so both experts and amateurs in a given domain, and even lay people, might be unconscious of the influence these biases have on the decisions they make [Stephan 1998].

In addition to this, Szyszka [2007] showed that a lack of understanding of the intricacies of finance and the capital market can, paradoxically, improve the rationality of decisions. In his survey studies, students of fine arts and music were less susceptible to overconfidence and were more accurate in their estimates of the probability of market events than a group of stock market traders and educated investors.

In addition to this, our paper provided results that contradict the classic theory of finance [see: Markowitz 1952]. Therefore, more and more authors are looking for a new paradigm in finance [Frąckowiak 2010; Gajdka 2013]. As Kuhn [1996] stated, paradigm shift is always accompanied by an anomaly that cannot be explained by the main theory of the time. It might be the fact that the prospect theory by Kahneman and Tversky [1979] was a pivotal anomaly to the *homo oeconomicus* model that was not to be omitted. We agree with Frąckowiak [2010] that *homo psychologicus*, instead of *homo oeconomicus*, is to be considered as a paradigm in 21st century finance.

In conclusion, we believe that our paper provided some new knowledge about the psychological determinants of decision making in the Polish capital market. Our results suggest the necessity of better educating investors to make them aware of potential psychological traps. In this article we therefore present a behavioural perspective on the decision making process, being convinced that behavioural finance is making its way into the mainstream.

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DOŚWIADCZENIE INWESTORSKIE A RACJONALNOŚĆ PODEJMOWANYCH DECYZJI

Celem niniejszej pracy jest analiza uwarunkowań racjonalności decyzji wśród polskich inwestorów giełdowych o różnym poziomie doświadczenia w inwestowaniu na giełdzie. Racjonalność decyzji została zdefiniowana z punktu widzenia finansów behawioralnych i została zoperacjonalizowana jako częstość ulegania określonym inklinacjom behawioralnym (zob. efekt pewności) podczas procesu podejmowania decyzji. W badaniach wzięła udział próba 270 osób, podzielona na w trzy grupy badawcze liczące po 90 osób: 90 profesjonalistów aktywnych zawodowo na rynku kapitałowym, 90 drobnych inwestorów, którzy amatorsko zajmowali się inwestowaniem na giełdzie oraz 90 studentów i studentek Wydziału Psychologii Wyższej Szkoły Finansów i Zarządzania w Warszawie, którzy nie posiadali żadnej wiedzy i doświadczenia w inwestowaniu na giełdzie i posłużyli za grupę kontrolną w badaniu. Uczestnicy badania wypełniali kwestionariusz z podstawowymi informacjami demograficznymi i jednym sytuacyjnym zadaniem, mierzącym podatność na efekt pewności. Analiza wyników wykazała, że uleganie efektowi pewności jest związane z poziomem doświadczenia w inwestowaniu na giełdzie, przy czym im wyższe doświadczenie, tym wyższa podatność na tą inklinację behawioralną.

Słowa kluczowe: doświadczenie inwestorskie, inklinacja behawioralna, racjonalność, finanse behawioralne.