SOCIAL FACTORS TO DIMINISH HERDING BEHAVIOUR: AN EXPERIMENT ON STOCK PREFERENCE

Ali Bayrakdaroğlu, Fırat Botan Şan, Ali Osman Öztop
Muğla Sıtıkı Koçman University, Faculty of Economics and Business Administration, Department of Business Administration, Muğla/TURKEY

Abstract - In this study, we investigated herding behavior of individuals while making decision on stock selection within the condition of social pressure which is also called as conformity. We used both survey and experiment techniques to obtain research data from 36 participants. These data obtained was analyzed by Pearson Chi-Square test to confirm hypotheses of the study. Also descriptive statistics of financial literacy level and personality traits of participants are given in the study. We have determined that herding behavior changes according to internal factors like personality traits and financial literacy level which is one of the social capital and external factors like musical (Mozart affect) settings in the decision environment. According to this, it is identified that higher level of neurotic personal trait with higher level of financial literacy under the musical settings lower the herding behavior of decision makers and directs them to appropriate alternatives.

Key Words- Financial Literacy, Herding, Conformity, Mozart Effect

I. Introduction

Stock markets are places that combine fund supply of individual/institutional investors and demand of corporate that goes public. In this manner, stock markets have some benefits for both economy and society like lower cost of borrowing and equal distribution of wealth among members of the community. There are number of prerequisites for these markets to work effectively and efficiently. The most important of these is safety (non-volatile and non-speculative) that protects especially small investors who invests their savings directly on stock markets.

Stock markets are more volatile (Morck et al., 2000; Aggarwal et al., 1999) because of less liquidity (Chang and Velasco, 1999) and aggregation of foreign institutional investors in emerging markets. Financial crisis of Turkey provides a good example of the situation at the beginning of this millennium. Especially, foreign investor pulled their money in a collective manner led to liquidity gaps in the markets (Rijckegeh and Ucer, 2005). As a result, domestic small investors are directed to follow other majority in financial decision making which lead to more volatility in these markets.

Asch (1956) was first to introduce individuals conformity to majority while decision making in the field of behavioural science. Study showed that even apparent decisions are influenced by the group. In these experiments, test subjects showed glimpse of hesitation which defined also as cognitive dissonance later (Erb et al., 1998). This is identified as herding behaviour in behavioural finance literature. Herding behaviour is described as mimicking the investment behaviour of the majority in stock markets by small investors. According to this, learning by observation and herding behaviour affects the behaviour of individuals. Herding behaviour suggests that even investors are rational and independent; decisions tend to converge easily and can suddenly shift into opposite belief with empowerment of reputation.
effects, direct payoff interaction etc. (Hirshleifer and Teoh, 2003).

There are two ways of overcoming those shortages and biases as internal and external. Internal ways of dealing with these biases depends on the ability of individuals like adding new cognition, ignoring or altering the cognition etc. (Barker, 2003). Besides, these shortages and biases generally occur unconsciously and because of this reason, external interventions may be more effective.

Ability to use those internal strategies is directly related to social capital and characteristic traits of individuals. We used financial literacy scale (Lusardi, 2008) as a social capital factor and five factor personality test (John et al., 1991) that measures characteristic traits in this study.

Music (also known as Mozart affect) can be considered as one of these external factors to diminish cognitive dissonance. The pleasure of utility maximization which is directly associated with decision-making and hedonistic willingness of music takes place in the same part of human consciousness (Perlovsky, 2013). According to this, music prevents their impact on each other by maintaining two types different information contained in contradiction with each other.

From this point of view, we investigated whether Mozart effect, financial literacy and personal traits of individuals that diminishes cognitive dissonance on stock market decisions during stressful times. Literature review on the subject is included in the second part of this study. In the third part, methodological design of the study was given. Findings given in the fourth section and study were concluded in the last part.

II. Literature Review

Confirmation bias arises when subjects seek only the information that confirms preexisting hypothesis while overlooking disconfirming information. (Shefrin, 2007) Up to now, a number of studies have investigated the effects of the confirmatory bias (Bruner and Potter 1964; Tversky and Kahneman 1974; Baker and Nofsinger 1983; Strohmer and Shivy 1994; Park J et. al. 2010).

On the other hand, cognitive dissonance explicates (Drees and Eckwert, 2005) the reasons why we submit to confirmation bias and it also partially explains that confirmation of our beliefs prevents or relieves mental pain. Apart from this, cognitive dissonance studies on confirmatory bias can be separated two main explanations of the behavior: (1) internal factors and (2) external factors as control strategies to diminish cognitive dissonance.

Early examples of research into herding have shown that (Banerjee, 1992; Bikhchandani et al. 1992; Welch, 1992) herders rationally act against their private information and follow the multitude. Thus far, several studies investigated the effects of financial literacy (Hilgert, M. Hogarth, J. and Beverly S. 2003) and numeracy (Lusardi, A. 2012) and have found that there is a strong link between financial literacy and financial management. In contrast with previous findings in the literature, (Avery and Zemsky 1998) shows that if price mechanism works efficiently, informational cascade would be impossible. One study by (Park and Sabourian, 2010) examined the structure of information. In this study; Park and Sabourian (2010) explains that information signals play a critical role in herd behavior. Analysts’ recommendations (Legoux et. al. 2014) and dispersion of opinion among financial decision makers about the interpretation of pieces of information does not have much of an impact on herding (Patterson and Sharma, 2005). As a result of irrational herd behavior in finance markets, external factors may be more effective than internal factors while overcoming confirmatory biases. Extensive literature surveys
on the external factors have put that emotional changes (Rick and Loewenstein, 2008) and being under stress (Weller and Hellburn, 2010) should influence financial decisions. Krumhansl (2002) found that different music styles should alter cognitive bias. (Xun Huang et al. 2014) concludes that there is a positive correlation between warmth and conformity. Also, (Lee S.W.S. and Shwarz N., 2010) claims that washing hands after giving financial decisions should reduce cognitive dissonance. This paper focuses on of the external factors, music, in the second main category of confirmatory bias behavior.

III. Methodology

In this study, we investigated whether the individual investors show compliance or not with the group while making decision on stock preference. In other words, herding behavior of the individual investor under the group pressure was investigated. Research was conducted in two parts. In the first part, financial literacy level and personality traits of the individuals were measured by survey technique. Financial literacy scale that includes just 6 questions about stock markets obtained from Lusardi (2006). Besides, John et al. (1991) five factor personality test was used to measure personality traits. Validity and reliability tested of the scale which includes 44 questions and five dimensions. SPSS was used for the evaluation of the data. Reliability of the all scales was analyzed by using Cronbach Alpha in this study.

In the second part of the study, we used experiment technique to carry out static group comparison. Price chart of the two stocks (an upward / a downward trend) was showed to the subject for selection with group of seven people as in the Asch (1953) experiment. Music (Mozart) was given to a number of respondents during their decision making while other answered questions in a quiet environment. It was intended to test whether music eliminates the cognitive dissonance or not. It is observed whether subjects demonstrate compliance to the group’s wrong decisions according to basic trend analysis. This process was repeated for five different investment alternatives. Hypotheses of the study which are tested by the data observed from 36 participants are as follows:

H_A: There is a relationship between five factor personality traits and conformity with group members

H_B: There is a relationship between financial literacy levels and conformity with group members

H_C: There is a relationship between musical settings and conformity with group members

Because of the entire variables nominal scale feature, relationship between five factor personality trait, financial literacy, music and conformity was measured by using Pearson Chi-Square analysis. Confidence interval was accepted and interpreted as %95 for the tests utilized in this study.

Model used within this research was formed according to hypotheses. According to this, Figure-1 below shows the model of the research:

![Fig. 1- Model of the Research](image-url)
Table-1 shows the reliability analysis of five factor personality traits and financial literacy scales.

Table 1: Reliability Analysis of Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach’s Alpha</th>
<th>#of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five factor personality traits</td>
<td>.800</td>
<td>44</td>
</tr>
<tr>
<td>Financial literacy</td>
<td>.726</td>
<td>6</td>
</tr>
</tbody>
</table>

It is observed that scales have enough reliability ratings according Cronbach’s Alpha test that shown in Table-1.

IV. Findings

A. Descriptive Statistics of Experiment Subjects

Descriptive statistics of conformity, five factor personality traits and financial literacy levels of participants are given below in Table-2.

Table 2: Descriptive Statistics of Participants

<table>
<thead>
<tr>
<th>Exact Conformity of Subjects</th>
<th>Exact Non- Conformity of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>N               %</td>
<td>N          %</td>
</tr>
<tr>
<td>23              63.9</td>
<td>13     36.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personality Dimensions</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>34</td>
<td>94.4</td>
</tr>
<tr>
<td>Agreeable</td>
<td>24</td>
<td>99.7</td>
</tr>
<tr>
<td>Responsibility</td>
<td>33</td>
<td>91.7</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>16</td>
<td>44.4</td>
</tr>
<tr>
<td>Open to Experience</td>
<td>29</td>
<td>80.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Literacy</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>11</td>
<td>30.5</td>
</tr>
<tr>
<td>Low</td>
<td>25</td>
<td>69.5</td>
</tr>
</tbody>
</table>

Conformity ratio of the participants to group is 63.9 percent as shown in Table 2. Besides, non-conformity ratio of the participants is 36.1 percent. According to this, it was observed that subjects generally comply with group. It was also determined that an important part of participants (%69.5) have low level of financial literacy. Descriptive statistics of five factor personality traits shows that Neuroticism is low among participants.

B. Chi-square analysis results relating to the testing of hypotheses on the subject

A chi-square analysis method was established in order to determine which type of investors shows what kind of psychological bias. Results are shown in Table 3.

Table 3: Chi-square Analysis Results Relating to the Testing of Hypotheses (Compliance with Group Behavior)

<table>
<thead>
<tr>
<th>Extroversion</th>
<th>Agreeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>\chi^2: 5.36 64.7</td>
<td>\chi^2: 15.24 75.2</td>
</tr>
<tr>
<td>P: 0.040 &lt; 0.05</td>
<td>P: 0.014 &lt; 0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Open to Experience</th>
<th>Financial Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>\chi^2: 2.36 59.5</td>
<td>\chi^2: 4.85 72.7</td>
</tr>
<tr>
<td>P: 0.043 &lt; 0.05</td>
<td>P: 0.034 &lt; 0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Neuroticism</th>
</tr>
</thead>
<tbody>
<tr>
<td>\chi^2: 6.23 36.5</td>
<td>\chi^2: 11.20 54.0</td>
</tr>
<tr>
<td>P: 0.405</td>
<td>P: 0.026 &lt; 0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Music</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>\chi^2: 10.17 52.2</td>
<td></td>
</tr>
<tr>
<td>P: 0.001 &lt; 0.05</td>
<td></td>
</tr>
</tbody>
</table>

It is found that %64.7 of extroversive people have herding behavior trait. Likewise, Lin’s (2011) has announced that people who have extraversion trait has shown herding behavior trait, too. However, %75.2 of people are found that they show herding behavior trait, too. Conformity with group behavior may be seen as normal for people who have agreeable personal trait. Results are consisted with the research of Jamshidinavid et al. (2012).

It is concluded that Individuals who describe himself as a responsible person usually do not comply with group behavior. People who have strong responsibility feeling behave obstinate in the financial decision making process. It can be said that responsible individual investor should be afraid of extreme responsibility so that it leads to them make their own answers.

According to the results, it appeared that both neurotic and open to experience individuals act
comply with group behavior (p<0, 05). Results are consisted with the research of Bashir et. al (2013). Especially, there is a positive correlation between anxiety and herding behavior. People who have anxiety usually follow the crowd or financial specialists’ advices (Lin, 2012). As a general we can say that the results partially confirm the hypothesis HA. Personality of individuals affects their tendency to herd behavior.

According to the results of the chi-square analysis, which is based on the testing of correlation between financial literacy and conformity with group behavior of individual, there is a significant relationship between these two variables (p <0.05). Accordingly, conformity with group behavior rate is %72,7 on the subjects whose financial literacy level is low. Previous research has reached similar findings. As a consequence of limited information in financial markets, investors act herding trait and it also shows investors are unsuccessful while interpreting current information (Fernandez et. al, 2009). Ignorant, illiterate and investors who behave emotionally in financial decisions are in the same herding behavior segment (Nofsinger and Sias, 1999: 2265).

Hc hypothesis has tested and concluded significant results which were established with the assumption of removing cognitive errors. Accordingly, there is a link between conformity with group behavior and the music (p<0, 05). %52, 2 of subjects has followed the group and gave the same answers given by the group. Therefore, the subjects gave right decision between fair and false because of the music.

V. Conclusion

For individuals to invest in the stock market is regarded as an important investment alternative. Also a substantial investment as an alternative investment instrument is quite risky investments for individuals. High volatility is determined depending on individual investors in these markets will be under the influence of many factors of financial investment decisions. One of them described as an investor to comply with the group deciding who can herd psychology. Investment preferences of individuals as a psychological bias, there could be many reasons for to follow herding behavior. However, first of all, it is thought to have played an important role of personality traits of individuals. Each individual, on the basis of behavioral finance have different personality characteristics so that each man is exposed to unusual psychological bias. At the same time, it is assumed that herding behavior as an irrational trait is affected by the level of financial information. Financial literacy level can get out of this psychological bias in the choice of the investment in financial markets, which will be a significant advantage for investor.

For this purpose, in this study, we examine whether differentiating or not that both financial literacy level and psychological characteristic of investors who show herding behavior trait. According to research results, there is a relationship between financial literacy and herding behavior of investor and it has been identified that features of a group of investors affects compliance with group behavior. It is determined that personal traits of extroversion, compatibility is the most prone to herding behavior psychology. Also research within the scope of the investors’ financial literacy levels are low, they are prone to a lot of the investors’ psychology and behavior has been identified. Finally musical settings (Mozart effect) of environment provide a direction to unconformity with decision preferences of group is determined.

As a result, economic activities are based on the human behavior. It is complicated to explain personal traits with mathematical models because of missing and manipulative economic information and the presence of herding behavior.

REFERENCES


Park, J., Bin Gu, P.K., Kumar A. and Raghunathan R. (2010) Confirmation Bias,


