Volume 24 • Number 4 • October 2024

Cilt 24 • Sayı 4 • Ekim 2024

Contents

EGE AKADEMİK BAKIŞ / *EGE ACADEMIC REVIEW*

Cilt 24 • Sayı 4 • Ekim 2024
SS. 655/666
Doi: 10.21121/eab.20240410
Başvuru Tarihi: 30.01.2023 • Kabul Tarihi: 13.11.2023

Article Type: *Research Article*

The Effect of Corporate Governance Capacity on Herd Behavior

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ABSTRACT

Behavioral finance, which rejects the basic assumption of traditional finance and argues that individuals do not always act rationally and that psychological factors have an effect on investor behavior, reveals the effect of cognitive biases and emotional factors on the investor. Herd behavior, which is one of these emotional factors, is to imitate the behavior of others in its most general definition. In addition, herd behavior, which affects investor behavior and financial markets, is a behavioral attitude showing that investors act together. On the other hand, corporate governance, which is becoming increasingly important for businesses, is a system in which company activities are managed and controlled. Companies with the highest corporate governance rating score can be included in the Borsa Istanbul Corporate Governance Index. The main purpose of working within the framework of herd behavior and corporate governance is to reveal the possible effect of corporate governance rating on herd behavior from a different perspective. In this context, the Christie and Huang (1995) Model and the Chang, Cheng, and Khorana (2000) Model are used in the research. In terms of herd behavior, no herding behavior was found in 16 other prominent indices in Borsa Istanbul according to the results of the Christie and Huang (CH) Model, while herd behavior was detected in some indices according to the results of Chang, Cheng, and Khorana (CCK) Model. In addition, no evidence was found in favor of herd formation according to both the CH Model and the CCK Model in companies included in the Corporate Governance Index within the scope of herd behavior and grouped as high/low corporate governance score within the framework of the determined criteria.

Keywords: Behavioral Finance, Herd Behavior, Corporate Governance Rating, Borsa İstanbul.

JEL Classification Codes: G4, G41

Referencing Style: APA 7

INTRODUCTION

Traditional economics assumes that each individual has constant preferences and logically maximizes them (Rabin, 1998: 11). More than one conventional finance theory has been developed in this way, contending that individuals are rational and retain their reasoning when making investment decisions. But much more recently, behavioral finance has been the focus of numerous academic studies seeking answers to questions like whether individual investors are purely rational or can cognitive and emotional errors influence financial decisions. These studies have documented a great deal of irrational behavior and repeated mistakes in the judgments made by adult human subjects. While behavioral finance rejects the homoeconomicus assumptions accepted by traditional finance, it emphasizes homo sapiens by trying to replace anyone with a spouse, child, boss, or insight with a more realistic financial actor model. Many scholars have defined behavioral finance in various ways and have given their interpretations of these definitions. But at the core of all of them are three keywords that are psychology, sociology, and finance (Ricciardi and Simon, 2000: 27). Behavioral aspects of psychology and sociology are integral catalysts within this field of study. Behavioral finance is in sharp contradiction with the Efficient Market Hypothesis (EPH) (Shiller, 2003: 83). Moreover, Mental and emotional factors affect the way investors make decisions and evaluate. For example, people in a bad mood have more pessimistic evaluations than those in a good mood. In addition, a bad mood causes investors to engage in detailed analytical activities and have a more critical perspective (Baker and Nofsinger, 2002: 102-104). One of the most striking issues in behavioral finance is herd behavior. Social psychologists and economists explained herd behavior as momentary changes in consumer behavior (for example, fashion).

Herd behavior in financial markets occurs when investment decisions are made on a particular piece

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of information by a group of investors, ignoring other relevant information such as news or financial reports (Ricciardi and Simon, 2000: 33). Hwang and Salmon (2004) describe herd behavior as showing a correlated behavior, imitating and removing private information without referring to the fundamentals. In addition, Aytekin and Aygün (2016) explain herd behavior as a group of investors buying or selling the same security in the same period. When we review the studies conducted on this topic, statistical evidence for the existence of herd behavior has been found in many studies conducted in financial markets (Puckett and Yan, 2008; Amirat and Bouri, 2009; Dornbusch and Park, 1995; Caparrelli et al., 2004; Xu et al., 2004; Ha, 2007; Caporale, 2008; Kremer and Nautz, 2011; Nakagawa and Uchida, 2011; Somuncu and Karan, 2010; Doğukanlı and Ergün, 2015; Hwang and Salmon, 2004; Kapusuzoğlu, 2011; Kayalıdere, 2012; İç and Kahyaoğlu, 2013; Akçaalan, 2017). However, as in the empirical analysis of many theoretical approaches in the field of finance, the findings of markets where herd behavior does not exist have also been put forward by many researchers (Demirer and Kutan, 2006; Gleason et al. 2004; Demirer et al., 2007; Altay, 2008; Çoban, 2009; Miceli, 2011; Kuzu and Çelik, 2020; Çimen and Ergün, 2019; Doğukan and Ergün, 2011).

It is conceivable to discuss the existence of several elements that might lead to financial market herd behavior. The main motivation of this study is to reveal the relationship between corporate governance capacity and herd behavior, which is not very common in the literature. Within the framework of this focus, it is thought that the findings to be obtained will be able to complete a piece that is not sufficiently covered in the literature. In addition, one of the main reasons underlying the handling of corporate governance capacity in this context is the thought that corporate governance practices can contribute to the formation of fair prices in the markets and that the problem of asymmetric information among market participants may arise. In this context, it would be beneficial to mention the concept of corporate governance after mentioning the theoretical framework. Although it is stated that the term corporate governance emerged in the mid-1980s, its foundations were laid in 1940 when modern companies began to evolve. In the Cadbury Report (1992), corporate governance was first defined and explained as "the system by which companies are directed and controlled". In this report, the objectives of corporate governance are expressed as follows (Shah and Napier, 2017; Kanca, 2020: 13): Ensuring the reliability of financial reports; the board of directors complies with the act of accountability; the reliability of the reports submitted by the auditors to the company users; the board of directors of the business complies with regulations and laws and is used within the scope of company purposes; equality with shareholders and protection of shareholders' rights in management. In this manner, Corporate governance is defined as the corporate governance structure that determines the rules for decision-making and the distribution of rights and responsibilities among different participants in the organization, such as the board of directors, directors, shareholders, and other stakeholders (OECD, 2004). In addition, corporate governance is the set of rules regulating the relations between company management and shareholders, and stakeholders. In other words, it is a management philosophy that aims to protect the rights of all stakeholders (stakeholders) directly or indirectly related to the activities of the company, including the shareholders, and to reveal the responsibilities and obligations of the company management (Schleifer and Vishny, 1997: 737).

The importance given to the concept of corporate governance is increasing day by day, both nationally and internationally, the Corporate Governance Index (XKURY), was created based on corporate governance score in Borsa Istanbul. The prerequisite for companies to be listed in the Corporate Governance Index is to have a corporate governance rating score calculated by the institutions within the framework of the four principles of corporate governance (equality, accountability, responsibility, and transparency). This score (at least 7 out of 10) is also expressed as a rating activity that questions the quality of corporate governance practices of companies. The fact of the matter is that companies that effectively implement corporate governance principles may result in more realistic behavior when pricing by market participants. It can be assumed that this situation may cause differentiation in the formation of market movements such as herd behavior compared to other indices.

In light of the aforementioned, the main purpose of working within the framework of herd behavior and corporate governance is to reveal the possible effect of corporate governance rating on herd behavior from a different perspective. The reason for putting this purpose in the focus of the research is to consider the possibility that following prominent principles may cause interaction on herd behavior in finance theory. In this context, Christie and Huang (1995) and the Chang, Cheng, and Khorana (2000) models, which are prominent in the literature, are used to determine herd behavior. The

content of the study, the methodological explanations of the methods to be used in the analysis, and the data set are mentioned. Afterward, the findings will be analyzed and final evaluations will be made. It is thought that the results will gain a new perspective and present a set of information in the evaluation of herd behavior in terms of the decision-making processes of market participants.

DATASET AND METHODOLOGY

The data set and models utilized, as well as the hypotheses developed in the course of the research, are presented in this section, which will also provide thorough information on the data set, hypotheses, and the applied methodological approach.

Dataset

As previously stated, the primary goal of this research is to ascertain whether corporate governance ratings may have an impact on herd behavior. By identifying any potential herd behavior in the Corporate Governance Index and 16 important indices in Borsa Istanbul, the first sub-objective established within the scope of the research aims to ascertain whether predictable market moves have become commonplace. In keeping with the primary goal of the study, the second sub-objective was developed to identify any potential herd behavior in the XKURY companies that were assigned high or low corporate governance rating points based on the predetermined criteria. Table 1 presents comprehensive details regarding the data set produced within the parameters of the research. The necessary indices' transaction code, description, number of firms listed in the indices, analysis time interval, data period, and data source are all listed in Table 1.

In addition, companies that were a part of XKURY during the 04.01.2021-29.03.2022 timeframe and supplied data continuity at that time were considered in the research to establish the second sub-goal. These companies' corporate governance ratings are divided into two groups, low and high. Firms with a corporate governance score of 9 or more go into the "high" category, while those with a score of less than 9 fall into the "poor" category. In this case, analysis was done on a total of 55 companies, 48 of which fell into the high group and 7 of which fell into the low category. Additionally, finnet.com was used to gather all of the daily closing information for the research. According to the first sub-goal of the study, null and alternative hypotheses were developed and evaluated for several selected indices to look for potential herd behavior in XKURY and other indexes. As part of the second sub-objective of the research, companies that are included in XKURY and that are rated as having high or low corporate governance rating points according to the established criteria are also included. The null and alternative hypothesis that was developed to observe the potential existence of herd behavior in these companies

Table 1. Detailed Dataset Information

Index Code	Index Description	Numb. of Listed Firms	Data Period	Time Interval	Data Source
XUTUM	BIST All Share Index	468	04.01.2010 - 29.03.2022	Daily	finnet.com
XKURY	BIST Corporate Governance Index	53			
XU100	BIST 100 Index	100			
XUSRD	BIST Sustainability Index	73			
XUSIN	BIST Industrial Index	202			
XGIDA	BIST Food and Beverage Index	34			
XKMYA	BIST Chemical Petroleum Plastics Index	41			
XMADN	BIST Mining Index	6			
XMANA	BIST Basic Metal Index	25			
XKAGT	BIST Wood, Paper Printing Index	15			
XTEKS	BIST Textile Leather Index	21			
XUHIZ	BIST Services Index	109			
XTRZM	BIST Tourism Index	11			
XULAS	BIST Transportation Index	10			
XBANK	BIST Bank Index	12			
XSPOR	BIST Sports Index	4			
XUTEK	BIST Technology Index	32			

is also provided below. The research hypotheses are stated as follows in this context:

H_{0A}: There is no herd behavior in the XKURY index traded on Borsa Istanbul.

H_{1A}: There is herd behavior in the XKURY index traded in Borsa Istanbul.

H_{0B}: Corporate governance rating score does not affect herd behavior.

H_{1B}: Corporate governance rating score affects herd behavior.

If the anticipated statistically significant results are attained, the null hypotheses can be ruled out within the parameters of the models that were utilized, while the existence of herd behavior in the pertinent markets can be asserted. If the results were otherwise, we would conclude that markets do not, from this perspective, show herd behavior.

Last but not least, it is crucial to stress that portfolios are created when the two methodologies utilized to look for potential herd behavior within the context of this research are methodologically explained. Portfolios having at least 25 stocks and portfolio returns are determined equally weighted in these models. However, in this study, the effect of herd behavior on the returns obtained from the closing prices of the index calculated by Borsa İstanbul was investigated. Although this study was not carried out on portfolios created in an individual style, especially for the Christie and Huang (1995) Model, indices without 25 companies were not taken into account. In the Chang, Cheng, and Khorana (2000) Model, it is assumed that there will be no problem for the indices created by Borsa Istanbul and for the general application since the number of companies is not given in the reference study. In addition, it is anticipated that value-weighted indices created by Borsa Istanbul will not pose a problem as in other studies on stock markets in the literature.

METHODOLOGY

To accomplish the research's primary goal and supporting objectives, the Christie and Huang (1995) Model and Chang, Cheng, and Khorana (2000) Model, two herd behavior measurement approaches, were used. Herd behavior, according to Christie and Huang (1995), prevents individual returns from differing from market returns. Based on this viewpoint, researchers used stock prices to compute the cross-section standard deviations or variances of stock returns. It was determined how closely the individual responses collectively resembled the mean using this deviance. Following this theory, the distribution of all stocks that move with the market will be zero, but it is claimed that this value will rise if more stocks move in a different direction. Rational asset pricing models and herd behavior predictions are most visible on days with abnormally significant average price movements or when the market is under stress. Based on this supposition, it was looked into whether the distributions in the herd behavior research were significantly lower than the average during the aforementioned times. Researchers isolate the level of distribution, St, at the extremes of the market return distribution and examine if it significantly differs from the average distribution levels that do not include the outermost market returns to discriminate between the two hypotheses. The stock return distribution S (CSSD) is measured using the following regression to conduct these tests (Christie ve Huang, 1995: 32-33):

$$S = \sqrt{\frac{\sum_{i=1}^{n}(r_i - \bar{\Gamma})^2}{n-1}}$$

$$\mathrm{CSSD} = \alpha + \beta_1 D_t^U + \beta_2 D_t^L + \varepsilon_t$$

r_i: The observed return of the stock.,

r^-: Cross-section average of returns,

α: Sample average distribution that does not include the areas that are affected by the two dummy variables,

D_t^L: Dummy variable, (This value takes the value of 1 if it is found at the low end of the market; 0 if it is not found),

D_t^U: Dummy variable, (This value takes the value 1 if found at the high end of the market, 0 if it is not found),

ε_t: The random error term.

The Rational Asset Pricing Model states that while substantial and positive $\beta 1$ and $\beta 2$ coefficients should be discovered, significant and negative $\beta 1$ and $\beta 2$ coefficients are required to be discovered for herd behavior. To demonstrate herd behavior, it is crucial to ascertain whether asset returns tend to rise or fall in response to changes in market returns. It should be highlighted that while a low distribution is predicted when herd behavior is present, this does not always imply that there is herd behavior. For instance, even in the absence of herd behavior, the lack of new information in a transaction interval may result in limited dispersion (Ergün, 2013: 45).

The Chang, Cheng, and Khorana (2000) Model is a different study methodology that suggests there might not be a linear link between the cross-sectional standard deviation of the return rates and the market return. It can be claimed that the research discussed in this context has the property of complementing one another. In contrast to Chang, Cheng, and Khorana's (2000) Model, which uses the cross-sectional absolute deviation of returns (CSAD) as a measure of distribution, rational asset pricing models forecast that stock return distributions are both an increasing function of market returns and that the relationship is linear. The linear and incremental link between distribution and market return will no longer hold if market participants have a propensity to follow aggregate market behavior and disregard their priorities during periods of significant average price changes, or herd behavior. Instead, the relationship might shift to a nonlinear upward or downward trend (Chang, Cheng, and Khorana, 2000: 1655). They used the cross-sectional absolute deviation of returns (CSAD), a measure of return distribution created by Chang, Cheng, and Khorana in 2000. The application form is provided below:

$$CSAD_t = \frac{1}{n}\sum_{i=1}^{n} |R_{i,t} - R_{m,t}|$$

R_{it} represents the return of the ton asset in question, Rmt refers to the return of the market portfolio, and CSAD shows the link between these returns.

The CCK model is inspired by the Rational Capital Asset Pricing Model (CAPM), which relates the intrinsic linearity of individual stock returns to market portfolio returns. In this sense, a violation of the linearity condition would favor herd behavior. Accordingly, a conditional version of the Black (1972) Capital Asset Pricing Model (CAPM) can be expressed as follows (Chang, et al., 2000: 1655):

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R^2_{m,t} + \varepsilon_t$$

The CCK model states that a proportional increase in the cross-sectional absolute deviation (CSAD) during moments of extreme market fluctuations can demonstrate the existence of less or less herding behavior. As a consequence, the nonlinear coefficient γ_2 will be statistically significant and negative if there is a herd; otherwise, a statistically positive γ_2 does not show any evidence of herd behavior (Demirer, Kutan, and Chen, 2010: 286). To reiterate, it is conceivable to contend that if the market exhibits herd behavior, the distribution of returns will rise as market returns fall or fall as they rise (Chang, et al., 2000: 1653).

FINDINGS AND ANALYSIS

The Christie and Huang (1995) Model was initially applied to the 16 main indices in Borsa Istanbul as well as the Corporate Governance Index to discover any potential herd behavior. As mentioned at the end of the Dataset part, indices with a density of less than 25 companies were not included in the analysis for the CSSD Model. The analysis's outcomes are summarized below.

Results of the herd behavior investigation using Christie and Huang's (1995) Model are shown in Table 2. While 5% (higher) and 1% (lower) return distributions of the market return were employed to illustrate the market stress times, the $CSSD = \alpha + \beta_1 D_t^U + \beta_2 D_t^L + \varepsilon_t$ regression equation was taken into consideration to examine if herding behavior could be present in the 17 indices used to represent the market. According to CAPM, whilst significant and negative β_1 and β_2 coefficients should be discovered for herd behavior, statistically significant and positive β_1 and β_2 coefficients should be found (Christie & Huang, 1995). According to the analytical findings shown in Table 2, it is also remarkable that in both the 5% and 1% slices of the XUSIN index, the β_1 coefficient is not negative and statistically significant. It was discovered that other indices were meaningful and positive in both the 1% and 5% slices. This demonstrates that, as the CAPM expected, it makes statistically significant and favorable predictions demonstrating that stock return distributions rise during periods of big price movements. On the other hand, not all of the examined sectors could achieve negative and significant β_1 and β_2 coefficients. This indicates that there is no evidence of herd formation in the higher and lower (5% and 1%) market sectors. In other words, the null hypothesis is accepted for all indices in both the 5% and 1% slices and it is claimed that investors do not behave collectively with shared knowledge, do not create herd behavior, and do not experience predictable market fluctuations. When all the data are taken into consideration, it is also important to note that the obtained results are comparable to those of Christie and Huang's (1995) research and that the β_1 coefficients are closer to one another than the β_2 coefficients. According to this scenario, the distribution of returns during periods of significant market declines is more comparable to the distribution of returns during periods of significant market rises.

Table 2. The outcomes of the regression between the return distributions of the stocks included in the indices and the dummy variables that reflect the index's extreme values of 5% and 1% (CSSD Model)

	Market return at 5% of the yield distribution's extreme top/bottom positions			Market return at 1% of the yield distribution's extreme top/bottom positions		
Index	**α**	**(β_1)**	**(β_2)**	**α**	**(β_1)**	**(β_2)**
XUTUM	0,0016	0,0002 (0.000***)	0,0004 (0.000***)	0,0016	0,0003 (0.000***)	0,0009 (0.000***)
XKURY	0,0029	0,0006 (0.000***)	0,0010 (0.000***)	0,0029	0,0011 (0.000***)	0,0019 (0.000***)
XU100	0,0025	0,0004 (0.000***)	0,0008 (0.000***)	0,0026	0,0008 (0.000***)	0,0015 (0.000***)
XUSURD	0,0026	0,0005 (0.000***)	0,0010 (0.000***)	0,0027	0,0010 (0.000***)	0,0017 (0.000***)
XUSIN	0,0029	-0,0000 (0,641)	0,0007 (0.000***)	0,0030	-0,0000 (0,777)	0,0012 (0.000***)
XGIDA	0,0064	0,0011 (0.000***)	0,0024 (0.000***)	0,0065	0,0017 (0,001)***	0,0035 (0.000***)
XKMYA	0,0055	0,0008 (0,0001)***	0,0019 (0.000***)	0,0056	0,0012 (0,0045)***	0,0024 (0.000***)
XMANA	0,0064	0,0011 (0.000***)	0,0022 (0.000***)	0,0065	0,0012 (0,0458)**	0,0040 (0.000***)
XUHIZ	0,0054	0,0009 (0.000***)	0,0017 (0.000***)	0,0055	0,0011 (0,0041)***	0,0031 (0.000***)
XUTEK	0,0101	0,0008 (0,0971)*	0,0029 (0.000***)	0,0102	0,0009 (0,391)	0,0058 (0.000***)

Significance is indicated by the symbols *, **, and *** at 10%, 5%, and 1% level, respectively.

As stated in the methodology section, Table 3 illustrates the outcomes of the herd behavior analysis by using the Chang, Cheng, and Khorana (2000) Model, which was created in addition to the Christie and Huang (1995) Model and chosen to be employed in the research. The linear CH (1995) Model may have difficulties capturing the combined movement between individual asset returns and total market returns, which might produce inaccurate test findings. To conclude herd behavior, nonlinear tests were considered (Demirer et al., 2010, p. 290). The 17 indices that were employed to represent the market were examined using the $CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R^2_{m,t} +$ regression equation to determine whether herd behavior could be evident.

At first glance, Table 3 appears to indicate that all γ_2 values investigated are positive and statistically significant at the 1% level for the whole sample period. It should be emphasized, nonetheless, that the CCK (2000) Model requires that the γ_2 number be negative and meaningful to address herd behavior that demonstrates a nonlinear and downward connection between stock return distributions and market returns. In this circumstance, it may be argued that there was no herd behavior for the whole sample. That being said, although γ_2 values with various degrees of significance are found, only the XTRZM index is negative among these values, and the other significant values are all positive, according to the study results for the upmarket period. Out of the 17 indices taken into account during the upmarket period, this appears to suggest that only the XTRZM index investor behaved together and caused the formation of a herd. However, only the XKURY, XUSURD, and XGIDA indices exhibit signs of herd behavior when the analytical findings from the down market period are evaluated. The XUSURD index has a 5% significant negative γ_2 value, the XBANK index has a 1% significant negative γ_2 value, and the XKURY and XGIDA indices have a 10% significant negative γ_2 value, respectively. The existence of this herd behavior in the pertinent indices suggests that market fluctuations are predictable. The null hypothesis was accepted for all of the indexes chosen throughout the whole sample period when the hypotheses developed within the scope of the research were examined. The H_{1A} hypothesis was accepted only for the XTRZM index

Table 3. Regression Outcomes of $CSAD_{m,t}$ on Market Returns

	Whole Sample Period			Up Market Period			Down Market Period		
Index	**α**	**γ1**	**γ2**	**α**	**γ1**	**γ2**	**α**	**γ1**	**γ2**
XTUM	0,0162	0,0026 (0,6533)	3,4276 (0.000)***	0,0148	0,1600 (0.000)***	1,3775 (0,0331)**	0,0145	-0,2389 (0.000)***	-0,2451 (0,5006)
XKURY	0,0137	0,0009 (0,8524)	3,1735 (0.000)***	0,0124	0,1371 (0.000)***	1,8716 (0,0011)***	0,0121	-0,2420 (0.000)***	-0,5943 (0,0635)*
XU100	0,0133	-0,0001 (0,9783)	2,5946 (0.000)***	0,0122	0,1020 (0.000)***	1,8095 (0,0011)***	0,0120	-0,1931 (0.000)***	-0,4302 (0,1312)
XUSURD	0,0126	-0,0006 (0,8971)	2,6957 (0.000)***	0,0113	0,1235 (0.000)***	1,5597 (0,0021)***	0,0112	-0,2155 (0.000)***	-0,6651 (0,0186)**
XUSIN	0,016	0,0023 (0,709)	3,2629 (0.000)***	0,0147	0,1425 (0.000)***	1,6288 (0,0237)**	0,0146	-0,2215 (0.000)***	-0,1802 (0,6405)
XGIDA	0,0175	0,0016 (0,8611)	3,6109 (0.000)***	0,0158	0,1894 (0.000)***	1,4630 (0,1714)	0,0155	-0,3028 (0.000)***	-1,0743 (0,0651)*
XKMYA	0,0151	-0,0064 (0,3942)	2,5140 (0.000)***	0,0141	0,0844 (0,0211)**	2,0908 (0,0231)**	0,0139	-0,1966 (0.000)***	-0,5022 (0,2513)
XMADN	0,017	-0,0071 (0,7087)	3,2233 (0.000)***	0,0159	0,0964 (0,2876)	2,2713 (0,319)	0,0160	-0,1678 (0,0215)**	0,6674 (0,5561)
XMANA	0,0153	0,0107 (0,2324)	3,0741 (0.000)***	0,0145	0,1087 (0,0124)**	1,8436 (0,0916)*	0,0137	-0,2071 (0.000)***	-0,1238 (0,8117)
XKAGT	0,017	0,0231 (0,0245)**	3,7278 (0.000)***	0,0159	0,1494 (0,0021)***	2,3616 (0,0528)*	0,0155	-0,2089 (0.000)***	0,1906 (0,7537)
XTEKS	0,0173	-0,0159 (0,1175)	3,5498 (0.000)***	0,0155	0,2076 (0.000)***	-0,3557 (0,7504)	0,0161	-0,1988 (0.000)***	0,7549 (0,239)
XUHIZ	0,0171	0,0074 (0,3707)	3,4795 (0.000)***	0,0156	0,2104 (0.000)***	0,08775 (0,9255)	0,0152	-0,2568 (0.000)***	-0,4110 (0,4185)
XTRZM	0,0199	0,0262 (0,1151)	4,1925 (0.000)***	0,0175	0,3991 (0.000)***	-3,7321 (0,0619)*	0,0176	-0,2728 (0.000)***	0,0197 (0,9838)
XULAS	0,0158	0,0187 (0,1743)	2,9206 (0.000)***	0,01467	0,1748 (0,0089)***	0,0967 (0,954)	0,0145	-0,1500 (0,0036)***	0,4504 (0,573)
XBANK	0,0122	0,0174 (0,0648)*	4,5583 (0.000)***	0,0101	0,2487 (0.000)***	1,9236 (0,0783)*	0,0096	-0,3768 (0.000)***	-1,4715 (0,0068)***
XSPOR	0,0204	-0,0099 (0,6442)	4,1403 (0.000)***	0,0179	0,2685 (0,0064)***	-0,0539 (0,9826)	0,0192	-0,2371 (0,0057)***	0,4719 (0,7228)
XUTEK	0,017	-0,0260 (0,0308)**	2,4986 (0.000)***	0,0160	0,0970 (0,0776)*	0,8039 (0,5605)	0,0152	-0,2684 (0.000)***	-1,0581 (0,1504)

Significance is indicated by the symbols *, **, and *** at 10%, 5%, and 1% level, respectively.

and denied for the other 16 indices, according to the analytical findings obtained during the up-market period. The H_{1A} hypothesis was finally adopted owing to the herd formation in the XKURY, XUSIN, XGIDA, and XBANK indices, and the H_{0A} hypothesis for the other indices, as a consequence of the observations and findings seen in the down market period. Additionally, it can be demonstrated that the herd effect is more pronounced in market losses when the regression findings from tests using sparse data on markets that are up and down separately are examined. This suggests that times of market losses are when herd behavior is most likely to be seen. The idea of loss aversion is put out in certain behavioral finance research, and our conclusion

is compatible with that. This theory postulates that investors' utility functions are constructed in a way that makes it more likely that they will avoid losses than they will experience gains. To put it another way, for investors, the pleasure of winning is equal to the agony of losing (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991). Due to investor psychology's tendency to produce asymmetrical responses to market gains and losses, the herd find, which happens when investors experience market losses, may thus be caused by these times of market losses (Demirer et al., 2010).

Also, it is estimated that the outcomes of the Christie and Huang (1995) Model, a unique aspect of the research that is carried out in the framework of potential herd behavior in companies that are listed in the XKURY and whose corporate governance rating points are classified as high or low within the established criteria. Similarly, for this model, since the number of companies whose corporate governance score has decreased is less than 25, analysis for the CSSD Model has been carried out only on companies whose corporate governance score has increased compared to the previous period. In this context, the analysis findings were not mentioned in a table, since no statistically significant result could be determined on the herd behavior, and the possibility of comparison was lost.

The outputs of the Chang, Cheng, and Khorana (2000) Model, which was used to classify firms listed on XKURY as having high or low corporate governance rating points within the predetermined criteria, are shown in Table 5. To ascertain if herd behavior could exist in the grouped companies, the $CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R^2_{m,t} + \varepsilon_t$ regression equation was examined.

Table 4 shows that only the companies with strong corporate governance rating scores have a significant negative γ_1 coefficient during the up-market period. However, the CCK (2000) Model stipulates that to address herd behavior in the markets, a negative and significant γ_2 value must occur. In this case, it is argued that the investor of the firm that possesses both high and low corporate governance ratings does not act by broad information in any of the three scenarios (whole sample, upmarket, and downmarket periods). By rejecting the H1B hypothesis developed within the constraints of the research, the requirement of acknowledging H0B has been revealed in light of these findings.

CONCLUDING REMARKS

By seeking to explain "how" and "why" markets can be inefficient, reflecting the erratic nature of the general human psyche, behavioral finance varies from classic finance theories. The field of behavioral finance studies the influence of psychological and social factors on financial markets. The underlying principle of this review is that individuals are illogical and that cognitive dissonances and psychological misconceptions influence how they make decisions. Herd behavior, which is one of many psychological fallacies and is crucial to understanding how investor behavior affects financial markets, is defined as replicating other investors' judgments rather than conducting one's comprehensive examination. Herd, a challenging term to define accurately, may be summed up as connected individual behavior patterns. At this point, it may be concluded that the idea of the herd is strongly connected to concepts like false expectations, erratic shifts without a significant amount of new information, bubbles, exuberance, and lunacy. The major emphasis of this research, corporate governance, which may affect herd behavior, comprised both the data component and the conceptual focus of the study. Corporate governance, which has lately emerged as a primary concern for the performance of businesses in the market, is defined as a framework that integrates all of the company's stakeholders. The procedures and methods used to command and control a corporation are another definition of corporate governance. As a result of the

Table 4. Regression Outcomes of $CSAD_{m,t}$ on Market Returns (for XKURY)

	Whole Sample Period			Up Market Period			Down Market Period		
Index	**α**	**γ1**	**γ2**	**α**	**γ1**	**γ2**	**α**	**γ1**	**γ2**
High Score Firms	0,0157	-0,0074 0,7017	0,4499 0,4879	0,0142	0,1678 (0,0434)**	2,4316 0,1723	0,0156	-0,0937 0,4121	-1,8791 0,4743
Low Score Firms	0,0194	-0,0526 0,1346	-0,5252 0,6523	0,0179	-0,0878 0,5446	-2,1789 0,4825	0,0191	-0,2135 0,3143	-5,0942 0,2987

Significance is indicated by the symbols *, **, and *** at 10%, 5%, and 1% level, respectively.

necessity to embrace the idea of corporate governance and compare the levels of corporate governance activity among firms, a corporate governance compliance rating exercise has been developed and is now a requirement for companies to be included in the Corporate Governance Index. The four corporate governance principles (equality, accountability, responsibility, and transparency) are used to determine the corporate governance compliance rating, which is commonly alluded to as a rating.

The research's primary goal in this manner is to shed light on the potential impact of corporate governance ratings on herd behavior from a new angle. Two sub-objectives within the purview of this aim were established within the context of the study. The first goal is to demonstrate that using models developed by Christie-Huang (1995) and Chang, Cheng, and Khorana (2000) throughout 04.01.2010–29.03.2022, it is feasible to detect the presence of herd behavior in the Corporate Governance Index and 16 prominent indices in the Borsa Istanbul. Using the same techniques in the timescale of 04.01.2021-29.03.2022, the second sub-objective of the research is to identify the potential existence of herd behavior in the corporations whose corporate governance score is classified as high or low within the herd behavior perspective and over the determined criteria. According to the outputs of the Chang, Cheng, and Khorana (2000) Model, even though there was no evidence for the existence of herd behavior throughout the whole sample period. In this regard, the presence of this herd in the pertinent indexes leads to the conclusion that market participants might take advantage of predictable market movements. Furthermore, there is no connection between the corporate management score and herd behavior when we take a gander at the possibility of herd behavior in companies that are listed on the Corporate Governance Index and categorized as having a high or low corporate governance score within the parameters of the established criteria. The research's main results indicated outcomes in line with numerous other studies in the literature (Dornbusch and Park, 1995; Xu et al., 2004; Ha, 2007; Caporale, 2008; Nakagawa and Uchida, 2011; Kayalıdere, 2012; İç and Kahyaoğlu, 2013; Akçaalan, 2017; Kuzu and Çelik, 2020). However, the sensitive point here should not be forgotten that the comparison, which is expressed by the presence of similar studies in the literature, is the prominent research on the existence of herd behavior. There is no similar study in the literature about herd behavior and corporate management capacity, which is the main motivation and purpose of this research.

Additionally, it can be demonstrated that the herd effect is more pronounced in market losses when the regression findings for rising and falling markets are examined independently within the context of small data. This shows that during a time of market losses, there is a larger likelihood of detecting herd behavior. This finding was in line with the Prospect Theory proposed by Kahneman and Tversky in 1979, and it highlighted the idea of loss aversion. This research not only fills in the relevant literature gap but also offers a fresh collection of data that market participants may use. Moreover, it is anticipated that case studies will eventually contribute to the pertinent research, the corporate governance rating will be assessed from a different perspective besides herd behavior, and a comparison of herd behavior across globally selected indices would be possible. To be clear, in future studies, empirical applications focusing on a specific firm and studies that can take into account different country indices will provide added value to the literature on the interaction of corporate governance and herd behavior.

REFERENCES

Akçaalan, Ezgi (2017). *Herd Behavior in the Turkey Stock Market*. (Master Thesis), Izmir: Izmir University of Economics.

Altay, E. (2008). Herding in Capital Markets: Analysis of Herding Towards the Market in ISE. *Banking Regulation and Supervision Agency Banking and Markets*, 2(1), 27-58.

Amirat, A. & Bouri, A. (2009). Modeling Informational Cascade Via Behavior Biases. *Global Economy & Finance Journal*, 2(2), 81-103.

Aytekin, Y. & Aygün, M. (2016). A New Field in Finance "Behavioral Finance". *Journal of the Faculty of Economics and Administrative Sciences of Yüzüncü Yıl University*, (2), 143-156.

Black, F (1972). Capital Market Equilibrium with Restricted Borrowing. *Journal of Business*, 45(3), 444- 445. http://dx.doi.org/10.1086/295472

Caparrelli, F., D'Arcangelis, A. M. & Cassuto, A. (2004). Herding in The Italian Stock Market: A Case of Behavioral Finance. *The Journal of Behavioral Finance*, 5(4), 222-230. https://doi.org/10.1207/s15427579jpfm0504_5

Caporale, G. M., Economou, F. & Philippas, N. (2008). Herd Behaviour in Extreme Market Conditions: The Case of the Athens Stock Exchange.

Chang, E. C., Cheng, J. W. & Khorana, A. (2000). An Examination of Herd Behavior in Equity Markets: An İnternational Perspective. *Journal of Banking & Finance*, 24(10), 1651-1679.

Christie, W. G. & Huang, R. D. (1995). Following The Pied Piper: Do Individual Returns Herd Around the Market? *Financial Analysts Journa*l, 51(4), 31-37. https://doi.org/10.2469/faj.v51.n4.1918

Çimen, A. & Ergün, Z. C. (2019). Empirical Analysis of Herd Behavior in the Turkish IPO Market. *Izmir Journal of Economics*, 34(1), 67-75. https://doi.org/10.24988/ije.2019341794

Çoban, A. T. (2009). *Testing Herd Behavior in ISE*. (Master Thesis), Adana: Çukurova University Institute of Social Sciences.

Demirer, R. & Kutan, A. M. (2006). Does Herding Behavior Exist in Chinese Stock Markets? *Journal of International Financial Markets, Institutions, and Money,* 16(2), 123-142. https://doi.org/10.1016/j.intfin.2005.01.002

Demirer, R., Gubo, D. & Kutan, A. M. (2007). An Analysis of Cross-Country Herd Behavior in Stock Markets: A Regional Perspective. *Journal of International Financial Markets, Institutions, and Money*, 3(1), 123-142. https://doi.org/10.1016/J.IREF.2013.10.006

Demirer, R., Kutan, A. M. & Chen, C. D. (2010). Do Investors Herd in Emerging Stock Markets?: Evidence from the Taiwanese Market. *Journal of Economic Behavior & Organization*, 76(2), 283-295. https://doi.org/10.1016/J.JEBO.2010.06.013

Doğukanlı, H. & Ergün, B. (2011). Herd Behavior in Ise: A Research based on Cross-Sectional Deviation. *Dokuz Eylul University Journal of the Faculty of Business*, 12(2), 227-242.

Doğukanlı, H. & Ergün, B. (2015). Herding in BIST: An Investigation Using the Methodology of Hwang and Salmon. *Journal of Financial Political and Economic Comments*, (603), 7-24.

Dornbusch, R. & Park, Y. C. (1995). Financial Opening: Policy Lessons for Korea, Korea Institute of Finance. International Center for Economics Growth.

Ergün, B. (2013). Pay Senedi Piyasalarında Sürü Davranışı Türkiye Örneği. Doktora Tezi, Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü, Adana.

Gleason, K. C., Mathur, I. & Peterson, M. A. (2004). Analysis of Intraday Herding Behavior Among the Sector ETFs. *Journal of Empirical Finance*, 11(5), 681-694. https://doi.org/10.1016/J.JEMPFIN.2003.06.003

Ha, T. V. (2007). Price Limit Regulation and Herd Behavior in The Vietnamese Stock Market. *Interfaces for Advanced Economic Analysis Kyoto University*. https://doi.org/10.31219/osf.io/6ru75

Hwang, S. & Salmon, M. (2004). Market Stress and Herding. *Journal of Empirical Finance*, 11(4), 585-616. https://doi.org/10.1016/j.jempfin.2004.04.003

İç, S. & Kahyaoglu, B. (2013). Herd Behavior in BIST: An Application on Individual Stock Investors. *Journal of Business Economics and Financ*e, 2(2), 28-42.

Kahneman, D. & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, 47(2), 263-292. https://doi.org/0012-9682(197903)47:2<263:PTAAOD>2.0.CO;2-3.

Kanca, S. (2020). *The Effectiveness of the Internal Control System and The Impact of Corporate Governance Principles On Financial Performance: A Research in The BIST (XKURY) Corporate Governance Index*, (PhD Thesis). Trabzon: Eurasia University Institute of Social Sciences.

Kapusuzoğlu, A. (2011). Herding in the Istanbul Stock Exchange (ISE): A Case of Behavioral Finance. *African Journal of Business Management*, 5(27), 11210-11218. https://doi.org/10.5897/AJBM11.1984

Kayalidere, K. (2012). Herd Behavior in the Stock Market: An Empirical Study in the ISE. *Journal of Business Studies*, 4(4), 77-94.

Kremer, S. & Nautz, D. (2013). Short-Term Herding of Institutional Traders: New Evidence from The German Stock Market. *European Financial Management*, 19(4), 730-746. https://doi.org/10.1111/j.1468-036X.2011.00607.x

Kuzu, S. & Çelik, İ. (2020). Testing Existence of Herd Behavior in Borsa Istanbul: A Study in Borsa Istanbul. *Mehmet Akif Ersoy University Journal of Applied Sciences*, 4(2), 363-375. https://doi.org/10.31200/makuubd.783034

Miceli, V. (2011). Do Sovereign Wealth Funds Herd in Equity Markets? *Centre for Financial Analysis & Policy Working Paper*, (40). https://doi.org/10.1080/14697688.2013.830321

Nakagawa, R. & Uchida, H. (2011). Herd Behaviour by Japanese Banks After Financial Deregulation. *Economica*, 78(312), 618-636. https://doi.org/j.1468-0335.2010.00870.x

OECD (Organısatıon for Economıc Corperatıon and Development), 2004. *OECD Principles of Corporate Governance*. Available at https://www.oecd.org/corporate/ca/corporategovernanceprinciples/31557724.pdf (Accessed: 12 November 2021)

Puckett, A. & Yan, X. S. (2008). Short-Term Institutional Herding and Its Impact on Stock Prices. Available at SSRN 972254. https://doi.org/10.2139/SSRN.987692

Rabin, M. (1998). Psychology and Economics. *Journal of Economic Literature*, 36(1), 11-46.

Ricciardi, V. & Simon, H. K. (2000). What Is Behavioral Finance?. *Business, Education ve Technology Journal*, 2(2), 26-34. https://doi.org/10.1017/9781108303606.010

Shah, N. & Napier, C. J. (2017). The Cadbury Report 1992: Shared Vision and Beyond. United Kingdom.

Shiller, R. J. (2003). From Efficient Markets Theory to Behavioral Finance. *Journal of Economic Perspectives*, 17(1), 83-104.

Shleifer, A. & Vishny, R. W. (1997). A Survey of Corporate Governance. *The Journal of Finance*, 52(2), 737-783.

Somuncu, K. & Karan, M. B. (2005). The Impacts of International Portfolio Investments on the Istanbul Stock Exchange Market. *Turk Court Accounts*, 77, 149-167.

Tversky, A. & Kahneman, D. (1991). Loss Aversion in Riskless Choice: A Reference-Dependent Model. *The Quarterly Journal of Economics*, 106(4), 1039-1061.

Xu, Y., Chen, G. & Rui, O. M. (2004). When Will Investors Herd?: Evidence From The Chinese Stock Markets. *School of Economics and Finance*, University of Hong Kong.