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# Findings of Herd Behavior in Borsa Istanbul During Covid-19*

Covid-19 Döneminde Borsa İstanbul'da Sürü Davranışı Bulguları

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**Abstract:** In cases where investors' emotional and behavioral responses are influenced, mimicking fellow investors leads to the manifestation of herd behavior. This study is dedicated to scrutinizing and contrasting instances of herd behavior within the Borsa Istanbul during the Covid-19 period against those in the pre-pandemic phase. The analysis specifically encompasses the banking, food, transportation, tourism, and technology sectors traded on the Borsa Istanbul, as well as the BIST 30 and BIST 100 indices. The CSAD (cross-section absolute deviation) methodology is employed as the analytical framework. The findings delineate a lack of herd behavior during the pre-pandemic period. However, contrasting this, the pandemic period witnesses the emergence of herd behavior, evident within the BIST 30, BIST 100 indices, and the banking, food, and technology sectors.

**Keywords:** Behavioral Finance, Herd Behavior, CSAD, Covid-19.

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**Öz:** Yatırımcıların duygu ve davranışlarının etkilendiği dönemlerde, diğer yatırımcıları taklit etmesi, sürü davranışında bulunmalarına neden olmaktadır. Bu çalışmada Covid-19 dönemi ve pandemi öncesi dönem karşılaştırmalı olarak ele alınmıştır. Yatay kesit mutlak sapma (CSAD) yönteminin uygulandığı çalışmada, Borsa İstanbul'da işlem gören bankacılık, gıda, ulaştırma, turizm ve teknoloji sektörleri ile BIST 30 ve BIST 100 endeksleri incelenmiştir. Elde edilen bulgular çerçevesinde pandemi öncesi dönemde sürü davranışına rastlanmazken ve pandemi döneminde BIST 30, BIST 100 endeksleri ile banka, gıda, ulaştırma ve teknoloji sektörlerinde sürü davranışı görülmüştür.

**Anahtar Kelimeler:** Davranışsal Finans, Sürü Davranışı, CSAD, Covid-19.

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## 1. Introduction

In 2019, the SARS-CoV-2 virus emerged in Wuhan, China, rapidly affecting the entire nation. The virus initially spread throughout East Asia and quickly began affecting other countries, leading to worldwide panic. In January, the first death due to the virus occurred, leading the World Health Organization (WHO) to closely monitor the situation. On March 11, 2020, when the first case was reported in Turkey, the WHO declared it a global pandemic and named it Covid-19. The impact of Covid-19 continued to be felt worldwide in 2023, affecting over 761 million people. According to the WHO's announcement on March 21, 2023, the pandemic resulted in a total of 6.8 million deaths globally (WHO, 2023).

The covid-19 pandemic has had a profound consequence on the global economy. During the pandemic, the prolonged lockdown measures implemented by countries affected the real sector and disrupted global trade. Production came to a halt during the lockdown periods. The pandemic's impact on the economy manifested in various dimensions, including the healthcare sector crisis, international shipping disruptions, and the chip crisis. The pandemic-induced economic contraction prompted countries to adopt various monetary expansion measures. The global inflation spiral emerged through monetary expansion, deeply affecting national economies. Moreover, Covid-19 also influenced financial markets, causing fluctuations in various financial instruments, particularly oil prices and other commodities.

In times of Covid-19, turbulent periods in financial markets can lead investors to act in panic, following each other's moves or reacting excessively by taking similar positions. This situation can create artificial prices in the market, leading to price bubbles or triggering herd behaviors. Herd behavior in financial markets occurs when investors analyze incoming information in the same way, leading them to exhibit similar behaviors, or when investors follow or imitate other investors' actions.

In financial markets, investors may interpret incoming information in a similar manner, leading to the adoption of comparable positions. However, certain retail investors, lacking sufficient information, may resort to mimicking other investors, resulting in herd behavior. Investors with limited information may lack confidence in their own knowledge and, as a result, disregard it, choosing instead to follow the actions of other investors or attempt to capture market trends, ultimately giving rise to herd behavior.

Herd behavior refers to forming a crowd or group of individual or institutional investors who behave similarly or imitatively. The most general definition of herd behavior is the presence of correlated behavioral patterns among investors (Devenow and Welch, 1996: 604). Some researchers have described it as a situation where a group of investors takes identical positions in identical securities simultaneously and disregards their own information by imitating other investors' actions (Patterson and Sharma, 2007: 4). Investors acting in a herd-like manner hide their own knowledge and beliefs, making investment decisions based on collective actions (Chang et al., 2000: 1652).

Investors can analyze the financials of companies in the same way, interpret the information coming to the market in the same way, or take a position by considering the technical analysis of the stock price in a similar way. According to Bikhchandani and Sharma (2000), there are two types of herd behavior: intentional and unintentional. In intentional herd behavior, herds are formed as a result of investors consciously trying to follow other investors in some market periods. Investors who try to follow trends and gain returns according to the rising or falling market by trading feedback are causing the herd. Unintentional herding behavior is a herding movement that occurs when investors have the same information set in the market and react to the same information and unintentionally take the same positions.

When the dynamics of investors in the process of joining the herd are considered, two different views for intentional herding come to the fore; rational and irrational view (Zhang and Chen, 2017: 46). According to the irrational view, investors blindly follow other investors, completely ignoring their own knowledge and rational views (Devenow and Welch, 1996: 604). This view, driven by irrational beliefs and emotions, was described by Grinblatt et al. (1995) identified it with the momentum investment strategy. In the momentum investing strategy, investors approach buying winners and selling losers. Since prices are

assumed to carry future information in an efficient market, this behavior is irrational and cannot be expected to provide returns (Grinblatt et al., 1995: 1089).

This study aims to examine whether investors trading in Borsa Istanbul exhibited herd behavior from the onset of the Covid-19 pandemic to when the mask mandate was lifted in Turkey. As a means of comparison, the study performs an analysis of herd detection that encompasses the period prior to the pandemic. The study is divided into three parts. The second part presents a theoretical framework on herd behavior and reviews the existing literature studies. The third section explores empirical evidence of herd behavior in BIST during the pandemic.

## 2. Literature Review

Herd behavior, which has become the subject of various scientific fields such as psychology, sociology, and behavioral sciences, as well as mathematics and biology, has also drawn significant interest from the field of finance. Empirical and experimental studies aiming to understand investor behaviors in financial markets have explored instances where investors exhibit herd behavior and the potential consequences. Lakonishok et al. (1992) conducted a pioneering study in the finance literature. To gain a better understanding of the stock market, a herd model has been created to explore whether fund managers tend to hold similar positions by purchasing and selling the same stocks simultaneously. The study was unable to provide definite proof of market instability for the particular stocks and timeframe they examined.

Wermers (1999) used the herd detection model developed by Lakonishok et al. (1992) to present empirical evidence of herd behavior in investment funds' trading activities between 1975 and 1994. Nevertheless, Bikhchandani and Sharma (2000) criticized the herd detection model developed by Lakonishok et al. (1992) for not being a time-series trading model and for its reliance solely on the number of parties buying or selling stocks without considering the trading volume in the market, thus deeming it inadequate for detecting herd behavior.

Another study related to herd detection in financial markets is the Cross-Sectional Standard Deviation (CSSD) model introduced by Christie and Huang (1995). The purpose of this model is to investigate whether herding occurs in stocks during times of abnormal movements and stressful market conditions. CCSD anticipates that stocks with high volatility will display a wider distribution of individual returns. However, in cases of herd behavior, the model suggests that stock returns will cluster around the market return (Christie and Huang, 1995: 33).

Chang et al. (2000) introduced a novel approach, departing from the CSSD model, leading to the creation of the Cross-Sectional Absolute Deviation (CSAD) model. They postulated that the rational asset pricing model extends beyond stock return distribution solely in relation to market returns. Their innovation encompassed an acknowledgment of the interplay between these variables. Unlike the CSSD model's assertion, which implies an absence of linear correlation between distribution and market returns when investors engage in herding during volatile market phases, Chang et al. (2000) presented an alternative viewpoint. They suggested that the interrelation between stock return distribution and market returns would follow a non-linear pattern, characterized by either escalation or reduction (Chang et al., 2000: 1655).

Hwang and Salmon (2004) proposed a herd detection model that was developed based on the CSSD. They stated that in the presence of herd behavior in market when the Capital Asset Pricing Model (CAPM) is not valid, both beta and expected returns would be biased. Based on this, they suggested a model for detecting whether price deviations from their equilibrium are caused by herd behavior (Hwang and Salmon, 2004: 589).

Apart from comparing the distributions of stock returns with market returns, models have also been developed to detect herding based on the trading volumes in the market. Patterson and Sharma (2007) proposed a model in which they carried out a series of procedures related to the volumes of buyers and sellers within the trading volume. The current transaction price is considered as a buying-initiated trade if it is higher than the previous transaction price, and a selling-initiated trade if it is lower. In the event of

investors exhibiting herd behavior, it is expected that the number of buying-initiated or selling-initiated trades will be higher than expected (Patterson and Sharma, 2007: 9-11).

Experimental studies on herd behavior can also be found in the literature. Chamley and Gale (1994) conducted an experimental study on investors' time-based herd behavior, and according to their findings, herd behavior emerges when the time frame is very short, but the probability of herding diminishes as the period lengthens (Chamley and Gale, 1994: 1081). Another experimental study on this topic is conducted by Sgroi (2003). The participants in the experiment demonstrated delayed decision-making when their private information was not sufficiently strong, and during this period, they also observed the behaviors of other participants. From this point, an informational cascade occurred, and even though the initial decision-maker was incorrect, others followed suit, also making the wrong decision. In another study, Drehmann et al. (2005) designed an internet experiment with 6400 participants who possessed private information to test information-based herding. While no herd behavior was observed in the experiment, they reported that herd behavior was prevented in a flexible market price setting.

Rahayu et al. (2021) experimented with 100 investors on the Indonesian stock exchange and found that the social impact of expert investors was more compelling than fundamental market indicators, indicating that investors tend to follow the herd rather than rely on their own information. Baddeley et al. (2007) conducted an experimental study and noted that social information received by participants had a substantial impact on herd probability. They also stated that in a Bayesian model, shorter decision-making increased the likelihood of herd behavior. In a comprehensive experimental study, Baddeley et al. (2012) demonstrated a positive relationship between demographic factors, such as gender and age, and personality traits such as risk-taking and impulsivity, with herd behavior. They highlighted the existence of an automatic heuristic method that enables individuals to make rapid decisions under uncertainty. Furthermore, brain imaging results indicated the role of the amygdala in social learning and decision-making. They reported that individual differences were strongly associated with amygdala activations during herd decision-making.

It's important to highlight that the existing body of literature extensively presents empirical investigations into herd behavior. Tan et al. (2008) offered proof of herding tendencies in both ascending and descending markets in China. Demirer et al. (2015) explored herding behavior in diverse commodity futures markets, encompassing the US, and garnered notable evidence of herding within grain markets. They also illustrated that heightened price fluctuations in energy and metal markets correspondingly amplified herding within the grain market. Klein (2013) scrutinized periods of market tranquility and turbulence, unveiling evidence of herding particularly during high-volatility intervals in both the US and Eurozone. They noted that behavioral impacts exerted a more pronounced influence during times of crisis and heightened market volatility, in contrast to more stable periods. Balcilar et al. (2014) substantiated the presence of herd behavior across Gulf Arab stock markets. Philippas et al. (2013) pinpointed instances of herding within the US real estate investment trusts market between 2004 and 2011, linking the emergence of herding to a deterioration in investor sentiment.

Research pertaining to herd behavior has notably surged during the Covid-19 era and the subsequent post-pandemic phase. Bouri et al. (2021) showcased how the pandemic-induced uncertainty triggered herd behavior, a phenomenon evident in their study encompassing 49 global stock markets. Chang et al. (2020) unearthed indications of herd behavior within fossil fuel markets in the US, Europe, and Asia during the pandemic's impact. Espinosa-Méndez and Arias (2021) supplied evidence that Covid-19 heightened herd behavior within Australian stock markets.

Ferreruela and Mallor (2021) conducted an analysis on Spain and Portugal's stock markets, scrutinizing the 2008 financial crisis and the Covid-19 pandemic periods. They unveiled an intensification of herding behavior prior to the crisis, a reduction during it, and a resurgence post-crisis. However, during the pandemic, they detected evidence of herding particularly on days characterized by elevated market volatility. Wu et al. (2020), delving into Chinese markets during the Covid-19 epoch, identified diminished herding behavior compared to regular periods. They also highlighted that herding tendencies were more pronounced during intervals of decreased trading volume and reduced market volatility. Allam et al. (2020) substantiated herding's prevalence in the Egyptian market during the pandemic, identifying factors

influencing such behavior across varied sectors. Notably, Covid-19 case numbers and virus-related fatalities emerged as key determinants of herding behavior across nearly all sectors. Dhall and Singh (2020) presented robust evidence of herding during market downturns in the Indian market amid the pandemic. However, they acknowledged the existence of counter-herding tendencies in certain sectors prior to the outbreak.

Erdoğan (2021) reported the presence of herding behavior in Borsa Istanbul between 2010 and 2020. Özkan and Yavuzaslan (2022) observed herding behavior in Borsa Istanbul before and during the pandemic. Their research covered the period from the pandemic's beginning to December 14, 2020, along with its symmetric pre-pandemic period, focusing on the first year of the pandemic. In contrast, this study aims to expand the period, covering the time from the beginning of the pandemic to the complete cessation of pandemic measures in Turkey and its symmetric pre-pandemic period, to analyze the data with a broader dataset. Therefore, this study stands out from other works in the literature as it covers the entire period of pandemic measures in Turkey and its pre-pandemic phase.

## 3. Data, Methodology And Findings

This study focuses on testing herd behavior in financial markets during stressful periods, specifically during the Covid-19.

### 3.1. Data

This study is dedicated to the examination of herd behavior within Turkey's financial markets, spanning the timeframe from the outset of the Covid-19 pandemic until the cessation of pandemic-related constraints. Specifically, this period stretches from March 11, 2020, coinciding with the World Health Organization's pandemic declaration and Turkey's initial reported case, to April 26, 2022, when these restrictions were rescinded. This interval, encompassing 534 distinct observations, is demarcated as the "pandemic period."

To facilitate comparative analyses, our investigation incorporates a distinct pre-pandemic phase. Commencing on January 23, 2018, and culminating on March 10, 2020, this era comprises an equivalent 534 observations. Consequently, our dataset amalgamates a cumulative 1068 observations, capturing both the pre-pandemic and pandemic epochs, thus constituting a comprehensive time series.

The primary focus of this study revolves around five sectors: banking, food, transportation, tourism, and technology, all of which are actively traded on the Borsa Istanbul (BIST). Additionally, the BIST 100 and BIST 30 indices are integral components of our investigation. To compile the requisite data, we sourced daily closing prices.

### 3.2. The Methodology

To detect herding in financial markets, various tests have been developed, including the CSSD test introduced by Christie and Huang (1995) and other related tests discussed earlier. In this study, we utilize the cross-sectional absolute deviation (CSAD) test, which was developed by Chang et al. (2000) and has been widely adopted in the literature, as it addresses the limitations of the CSSD test and provides more accurate results. The CSAD test examines the movements of individual stock returns' distributions with respect to market returns.

Unlike the approach taken by Christie and Huang (1995), Chang et al. (2000) predict that in the presence of herding, the distribution of stock returns will not only be an increasing function of market returns but also exhibit a relationship with market returns. Furthermore, they anticipate that the relationship between market and stock return distributions will not be strictly linear and increasing. To achieve more flexibility, they formulated the CSAD test as follows:

$$CSAD_t = \frac{1}{N}\sum_{i=1}^{N} |R_{i,t} - R_{m,t}| \quad (1)$$

$CSAD_t$ represents the cross-sectional absolute deviation of daily returns, which measures the dispersion of stock returns' distributions with respect to the market return distribution. N denotes the number of stocks in the market, $R_{i,t}$ represents the return of the ith stock on day t, calculated as the natural logarithm of the price difference of two consecutive trading days. $R_{m,t}$ indicates the equal-weighted market return during the trading day.

According to Christie and Huang (1995), under the assumption of the asset pricing model, a linear relationship is expected between the distribution of stock returns and the average market return. However, Chang et al. (2000) noted that during stressful market periods, a non-linear relationship may exist. To test for this non-linear relationship, the second-degree expression of $R_{m,t}$ is included in the regression model as follows:

$$CSAD_t = \alpha + \gamma_1 \left| R_{m,t} \right| + \gamma_2 R_{m,t}^2 + \varepsilon_t \quad (2)$$

In the model, if the coefficient is negative and statistically significant, it indicates the presence of herding behavior in the market. On the other hand, if the coefficient is positive, the existence of herding behavior cannot be claimed.

## 3.3. The Findings

The study initially presents descriptive statistics. Table 1 displays the statistics related to the calculated CSAD during the pandemic period. In Table 1, the Tourism sector has the highest value and the highest standard deviation. It shows that unusual news or shocks entering the market may cause unusual movements in the horizontal cross-section absolute deviation of the tourism sector compared to other sectors. Additionally, when compared to Table 2, the standard deviation in all sectors except the indices increased during the pandemic period.

**Table 1:** Pandemic Period CSAD Descriptive Statistics

| CSAD | Mean | Max. | Min. | Std. Dev. |
|---|---|---|---|---|
| **BIST 30** | 0,0150 | 0,0422 | 0,0020 | 0,0054 |
| **BIST 100** | 0,0149 | 0,0426 | 0,0029 | 0,0053 |
| **Banks** | 0,0159 | 0,0616 | 0,0031 | 0,0097 |
| **Food and Beverage** | 0,0227 | 0,0840 | 0,0048 | 0,0113 |
| **Transportation** | 0,0228 | 0,0628 | 0,0046 | 0,0107 |
| **Tourism** | 0,0347 | 0,1213 | 0,0067 | 0,0213 |
| **Technology** | 0,0215 | 0,0859 | 0,0017 | 0,0092 |

Table 2, on the other hand, presents the descriptive statistics of CSAD before the pandemic. During the pre-pandemic period, the Transportation sector had the highest mean, BIST 30 had the highest value, and the Tourism sector had the lowest value. The shocks during the pandemic period were more effective on CSAD than before the pandemic.

**Table 2:** Pre-Pandemic Period CSAD Descriptive Statistics

| CSAD | Mean | Max. | Min. | Std. Dev. |
|---|---|---|---|---|
| **BIST 30** | 0,0163 | 0,7368 | 0,0061 | 0,0316 |
| **BIST 100** | 0,0162 | 0,7368 | 0,0063 | 0,0316 |
| **Banks** | 0,0148 | 0,0686 | 0,0040 | 0,0073 |
| **Food and Beverage** | 0,0186 | 0,0504 | 0,0066 | 0,0061 |
| **Transportation** | 0,0205 | 0,0624 | 0,0046 | 0,0104 |
| **Tourism** | 0,0204 | 0,1314 | 0,0034 | 0,0097 |
| **Technology** | 0,0195 | 0,0733 | 0,0060 | 0,0088 |

Table 3 presents the outcomes derived from the regression estimations concerning the second $CSAD_t$ equation applied to the Borsa Istanbul indices and respective sectors. The negative coefficient of $\boldsymbol{R_{m,t}^2}$ serves as an indicator of herd behavior, as elucidated by Chang et al. (2000: 1657). Across all predictive models,

with the exception of the Tourism sector, the coefficients manifest significance by being both negative and substantial. While the coefficient pertaining to the Tourism sector bears a negative sign, its statistical insignificance warrants attention. Consequently, within the pandemic period, we discern herd behavior at the 1% level of significance for the BIST 30, BIST 100, Banking, Food, and Technology sectors. For the Transportation sector, the manifestation of herd behavior reaches the 5% level of significance. Notably, the Tourism sector's coefficient lacks significance, precluding any decisive assertion regarding the presence of unequivocal herd behavior.

**Table 3:** Pandemic Period Herd Behavior

| Coefficient | BIST 30 | BIST 100 | Banks | Food and Beverage | Transportation | Tourism | Technology |
|---|---|---|---|---|---|---|---|
| **Constant** | 0,0125* | 0,0127* | 0,0127* | 0,0185* | 0,0203* | 0,0314* | 0,0189* |
| | (32,0605) | (33,7277) | (18,2674) | (23,0588) | (25,9501) | (19,9691) | (28,3355) |
| $\lvert R_{m,t} \rvert$ | 0,2638* | 0,2493* | 0,3731* | 0,4886* | 0,2739* | 0,3586** | 0,3094* |
| | (6,3849) | (5,9849) | (4,8564) | (5,4839) | (3,1607) | (2,0545) | (4,1938) |
| $R_{m,t}^2$ | -2,3539* | -2,2395* | -3,1826* | -4,4961* | -2,4676** | -2,7737 | -2,8263* |
| | (-3,6560) | (-3,3600) | (-2,5888) | (-3,1538) | (-1,7798) | (-0,9932) | (-2,3938) |
| **Adj. R²** | 0,1150 | 0,0970 | 0,0664 | 0,0794 | 0,0323 | 0,0093 | 0,0505 |

The table displays the estimates of the CSAD herd behavior detection model proposed by Chang et al. (2000). Along with the coefficients, it shows the Adj. R-squared value and the t-statistic value in parentheses. The *, ** symbols indicate statistical significance at the 1% and 5% levels, respectively.

Table 4 presents the results of the herd prediction model for the period just before the pandemic. The coefficient values of $R_{m,t}^2$ in the model are negative for the Food and Tourism sectors, but they are not significant at the 1%, 5%, and 10% levels. Therefore, it is observed that there is no significant and consistent herd behavior during the pre-pandemic period.

**Table 4:** Pre-Pandemic Period Herd Behavior

| Coefficient | BIST 30 | BIST 100 | Banks | Food and Beverage | Transportation | Tourism | Technology |
|---|---|---|---|---|---|---|---|
| **Constant** | 0,0125* | 0,0127* | 0,0127* | 0,0185* | 0,0203* | 0,0314* | 0,0189* |
| | (32,0605) | (33,7277) | (18,2674) | (23,0588) | (25,9501) | (19,9691) | (28,3355) |
| $\lvert R_{m,t} \rvert$ | 0,2638* | 0,2493* | 0,3731* | 0,4886* | 0,2739* | 0,3586** | 0,3094* |
| | (6,3849) | (5,9849) | (4,8564) | (5,4839) | (3,1607) | (2,0545) | (4,1938) |
| $R_{m,t}^2$ | -2,3539* | -2,2395* | -3,1826* | -4,4961* | -2,4676** | -2,7737 | -2,8263* |
| | (-3,6560) | (-3,3600) | (-2,5888) | (-3,1538) | (-1,7798) | (-0,9932) | (-2,3938) |
| **Adj. R²** | 0,1150 | 0,0970 | 0,0664 | 0,0794 | 0,0323 | 0,0093 | 0,0505 |

The table displays the estimates of the CSAD herd behavior detection model proposed by Chang et al. (2000). Along with the coefficients, it shows the Adj. R-squared value and the t-statistic value in parentheses. The *, ** symbols indicate statistical significance at the 1% and 5% levels, respectively.

## 4. Conclusion

Devenow and Welch (1996) have identified increased uncertainty and risk as triggers for herd behavior during certain periods. Klein (2013), in his study on turbulent markets, has stated that herd behavior tends to increase during crisis periods. In financial markets, when risk and uncertainty rise, investors may tend to disregard their own information and follow the actions of other investors. At times, investors who lack confidence in their own information may rationally imitate others, while at other times, they may create herds to protect their reputation or premiums. This phenomenon can lead to a departure from efficient markets, destabilization of markets, and the formation of artificial price movements.

In the literature, numerous studies have been conducted on herd behavior during downward market periods and crisis periods (Özkan and Yavuzaslan, 2022; Tan et al., 2008; Hwang and Salmon, 2004; Bowe and Domuta, 2004; Philippas et al., 2013). The objective of this study is to test the presence of herd behavior

in the Istanbul Stock Exchange equity market during the uncertain and risky period of the Covid-19 pandemic. The Covid-19 period is defined as the period between March 11, 2020, when the World Health Organization declared a pandemic, and April 26, 2022, the date when Covid-19 restrictions were lifted in Turkey. Additionally, to demonstrate the specific impact of the pandemic, pre pandemic period is selected for comparison. The pre-pandemic period was chosen as the symmetrical interval between January 23, 2018, and March 10, 2020, consisting of 534 observations. To gather evidence of herd behavior, the widely used method in the literature, the cross-sectional absolute deviation (CSAD) model developed by Chang et al. (2000), is applied in this study.

The existence of herd behavior in the market shows that investors act together. Investors ignoring their own information and relying on the information of the previous investor and shaping their decisions in this direction can lead to a gradual transfer of information. Herd behavior is predicted to occur most of the time during stressful and risky market periods. By selecting the pandemic period and the pre-pandemic period, it is aimed to compare stressed and stable markets.

According to the regression results of the CSAD model, herd behavior is observed in the BIST 30, BIST 100 indices, and in the banking, food, transportation, and technology sectors during the Covid-19 pandemic period, while in the tourism sector, although the coefficient was negative, it is not statistically significant. This indicates significant herd behavior in the selected periods and sectors in the Istanbul Stock Exchange. On the other hand, for the pre-pandemic period, no significant herd behavior is reported. This could be interpreted as an indication that herd behavior may increase during risky market periods.

According to the findings, investors prefer to act according to psychological factors in market conditions dominated by stress and risk. Sometimes, as a defense mechanism, they react to market information in the same way or follow the lead of other investors. This situation causes investors to form herds. In the selected market, which can be considered stable before the pandemic, herd behavior was not observed.

In addition, the study aimed to compare the sectors before and after the pandemic by selecting the sectors that are thought to be most affected by the pandemic. People rushed to markets during pandemic periods and there was a significant increase in food prices in many countries. There were income losses in the transportation sector due to lockdowns. In the established model, it is seen that investors acted collectively based on this information during the pandemic period.

This study comparatively discussed herd behavior in the pre-pandemic and post-pandemic periods. In addition, it is aimed to contribute to the literature by breaking down the sectors and presenting them comparatively, which are thought to be most affected by the pandemic. In future studies, it is recommended to conduct a comparative study based on panel data by considering different sectors of other markets in the world.

The findings align with the existing studies of Allam et al. (2020), Bouri et al. (2021), Dhall and Singh (2020), Chang et al. (2020), and Özkan and Yavuzaslan (2022). Thus, during the Covid-19 pandemic, with increased uncertainty and risk, the herd model has been significantly applicable to the selected indices and sectors in the Borsa Istanbul stock market, yielding evidence of herd behavior.

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Conceiving the Study: Author-1 (%50), Author-2 (%50)
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Data Collection: Author-1 (%50), Author-2 (%50)
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