

# Did The Covid-19 Pandemic Trigger Herding Behavior?

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## ABSTRACT

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This study aims to examine the influence of the COVID-19 pandemic on mutual fund herding in Indonesia. The research population comprises open-end mutual funds in Indonesia. By adopting the purposive sampling method, we selected the stock mutual funds registered from 2017 to 2022 as our research sample. We define the 2017-2019 period as before COVID-19 and 2020-2022 as during COVID-19. This study employs CSAD and CSSD as proxies for return dispersion by considering two types of indices as benchmarks, namely LQ45 and IDX Composite. Our study found that COVID-19 did trigger mutual fund herding. However, we failed to find herding behavior when there is a large market movement. Instead, we found reverse herding.

## SARI PATI

*Penelitian ini bertujuan untuk menguji pengaruh pandemi COVID-19 terhadap herding reksadana di Indonesia. Populasi penelitian adalah reksadana terbuka di Indonesia. Dengan menggunakan metode purposive sampling, kami memilih reksadana saham yang terdaftar pada tahun 2017 hingga 2022 sebagai sampel penelitian. Kami mendefinisikan periode 2017-2019 sebagai periode sebelum COVID-19 dan periode 2020-2022 sebagai periode selama COVID-19. Penelitian ini menggunakan CSAD dan CSSD sebagai proksi dispersi return dengan mempertimbangkan dua jenis indeks sebagai benchmark, yaitu LQ45 dan IDX Composite. Studi kami menemukan bahwa COVID-19 memang memicu herding oleh manajer reksadana. Namun, kami tidak menemukan perilaku herding ketika terjadi pergerakan pasar yang besar. Sebaliknya, kami menemukan reverse herding.*

## INTRODUCTION

The COVID-19 pandemic has resulted in severe crises throughout the world, not only in the context of a health crisis but also a social crisis and economic and financial crisis. During the COVID-19 pandemic, investors faced high uncertainty in market conditions, so they were concerned about their portfolio performance. It triggers the phenomenon of panic selling. In the COVID-19 period, the market capitalization value of most stock indices decreased as people avoided risk and started selling their financial assets (Akhtaruzzaman et al., 2021; Ashraf, 2020; Bai et al., 2021). As a result, it leads to difficulty in predicting financial markets.

The rapid surge in global uncertainty causes investors to behave irrationally. One form of irrational decision-making by market players is herding behavior (Christie & Huang, 1995). In addition to market and firm-specific risks, Lin (2018) discovered that herding behavior by analysts increases with aggregate uncertainty. Investors are told to herd when they imitate the actions of other investors, regardless of whether the imitating actions contradict their private signals.

*Herding behavior* is a phenomenon believed to be widespread in the social, psychological, economic, and financial areas. Activities carried out by an individual, including investment and financial activities, are often influenced by others. Others can influence an individual's thoughts, feelings, and actions through several media, such as words, observations of other people's actions (for instance, observations of demand and supply), and observations of the consequences of actions (such as someone's payoff or market prices).

Herding behavior is observed in a naïve investor and potentially in a professional such as a mutual fund manager. A mutual fund manager is a party who manages a collective investment portfolio for investors. The main goal of a mutual fund manager is to look for investment opportunities and provide an optimal level of risk and return trade-off for

customer funds. Their portfolio performance is critical in determining the compensation scheme (Bai et al., 2023; Modigliani & Pogue, 1975). When mutual fund managers' performance is assessed by comparing the portfolio return managed with the industry index or median, they are likely to ignore private information and "go with the flow." In other words, mutual fund managers also tend to herd by mimicking other fund managers' portfolio allocations.

Research on herding behavior has been widely conducted in developed and emerging markets. Most researchers suspect herding behavior is more profound in emerging capital markets due to the high level of asymmetric information and the low quality. Several empirical research tried to find out whether herding behavior occurs in the capital market (e.g., Chattopadhyay et al., 2018; Chen, 2013; Choe et al., 1999; Economou et al., 2011; Grinblatt et al., 1995; Henker et al., 2006; Rompotis, 2018; Wermers, 1999).

Several studies have examined herding behavior during COVID-19, employing individual stock data in developed, emerging, and frontier markets. Several studies have found herding behavior during COVID-19 (e.g., Alexakis et al., 2023; Ghorbel et al., 2022; Nguyen & Vo, 2023; Nouri-Goushki & Hojaji, 2023). Meanwhile, Huynh et al. (2023) found that herding behavior occurred in Australia in the first three waves of COVID-19, but reverse herding emerged in the fourth wave. In contrast, during the pandemic, Loang and Ahmad (2023) found no evidence of herding behavior in France, Hong Kong, Indonesia, Japan, Malaysia, Poland, the United Kingdom, and the United States.

Academics and researchers have also paid attention to the agent of herding behavior. Based on the literature review, herding behavior in the capital market can be carried out by individual investors, institutional investors (including mutual fund managers), and foreign investors (Komalasari et al., 2022). Each type of market player may have

different reasons, motivations, and intensity for herding behavior. However, empirical research on herding behavior by individual investors and mutual funds showed inconsistent results.

Research focusing on institutional investors' herding behavior is less than that of individual investors. Likewise, research on herding behavior by mutual fund managers, specifically during COVID-19, is still scarce in reputable journals. Research on mutual funds herding is essential because herding by institutional investors has a more significant impact on price changes than individual investors (Nofsinger & Sias, 1999). It can cause asset prices to deviate from their efficient value (Huang et al., 2015), resulting in the mispricing of assets, which can lead to financial instability (Ionescu, 2012).

Based on the inconsistency of findings and the lack of previous research focusing on the COVID-19 issue, our study aims to examine mutual fund herding before and during the COVID-19 pandemic in Indonesia. Our research focuses on Indonesia since, as an emerging country, it can experience capital market inefficiencies due to herding behavior. In addition, Indonesia has the largest number of mutual funds in the emerging market of Southeast Asia. Based on the capital market statistics report published by The Indonesia Central Securities Depository (KSEI) in August 2023, it was reported that the number of individual investors far exceeds institutional investors; however, institutional investors control 85.13% of asset value (in the form of shares)<sup>1</sup>.

This paper has three main contributions. First, it examines herd behavior in Indonesia's mutual funds during an uncertain period because of COVID-19. Second, based on previous study results, research on herding behavior in mutual funds in Indonesia is limited, leaving gaps for further investigation. Third, using the updated dataset, this study broadens the extant literature by analyzing herding behavior in Indonesian mutual funds.

## **Herding Behavior**

The efficient market hypothesis states that stock prices fully reflect all information available in the market. However, this hypothesis has received considerable criticism and challenges from analysts, academics, and market players. Wood (1995) states that the financial market is a real game filled with greed and fear, so it is possible that prices are not always rational, and efficiency may be a textbook hoax. This argument is supported empirically by discovering various market anomalies that undermine the accuracy of the efficient market hypothesis (Pompian, 2006). Studies on behavioral finance are starting to emerge to answer market anomalies that the efficient market hypothesis cannot explain (De Bondt & Thaler, 1985; French, 1980).

One factor considered to cause market inefficiency is herding behavior. The roots of herding behavior are explained by conformity theory. Aronson and Aronson (2011) define conformity as a change in an individual's behavior or opinion due to natural or imagined pressure from another individual or group of people. With conformity, people voluntarily follow a group's norms and expect to be rewarded or punished.

Herding behavior can also be viewed from agency theory. The contractual relationship between mutual fund managers (as agents) and investors (as principals) can drive herding behavior. Investment managers, as agents, have incentives to maintain their reputation and compensation, assessed based on their investment performance (Graham, 1999; Scharfstein & Stein, 1990). This motivation arises due to uncertainty regarding an investment manager's abilities or expertise.

Herding behavior occurs when investment managers with low ability deliberately imitate the decisions of senior investment managers and ignore their private information. They believe that senior investment managers have better information than they do. Inferior investment managers are tempted

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<sup>1</sup> Mutual funds are included in Indonesia's top 3 groups of institutional investors..

to improve their performance and reputation by ignoring their analysis and imitating others with more reliable information sources or skilled analytical decisions. This way, they believe they can manage or maintain their reputation in the market (Devenow & Welch, 1996).

Scharfstein and Stein (1990) believe that herding behavior occurs among investment managers because their performance measurements are relative, not absolute, and the «sharing-the-blame» effect drives their behavior. When their performance is evaluated by comparing it with others, it makes sense for investment managers with lower capabilities or reputations to replicate the actions taken by others with higher capabilities and reputations since this can help improve their image. However, an investment manager who has the ability and good reputation may also choose to follow the investment decisions taken by most other existing investment managers, even if they are not optimal, if the risk of potential failure is perceived to be greater than the potential success when he or she goes alone in the market (Graham, 1999).

Apart from reputation, compensation is also one of the reasons investment managers engage in herding behavior. Suppose an investment manager's compensation depends on how his or her performance is compared to other investment managers. In that case, it incentivizes the investment manager to change the portfolio's risk characteristics and make it inefficient in response to its relative return ranking (Brennan & Li, 2008; Roll, 1992). By imitating other investment managers, their performance will look good, at least so that the compensation they receive will stay the same.

Maug and Naik (2011) theoretically examined the relationship between risk-averse fund managers' compensation and asset allocation decisions. They found that fund managers adjust their portfolio allocation and follow their benchmark to protect their compensation.

Lakonishok et al. (1992) identified three reasons why herding behavior is more common among institutional investors than individual investors. First, institutions often seek to assess the quality of one another's investments so that they are more aware of the trades made by each institution than individual investors. Therefore, institutional investors are more likely to implement herding behavior than individuals. Second, referring to Scharfstein and Stein (1990), herding behavior by institutional investors is based on agency problems between investors and investment managers. The main issue investors face is the difficulty of objectively assessing the performance of investment managers, so they assess the investment manager's expertise by comparing it with the performance of other investment managers. To avoid looking bad, investment managers prefer to hold the same assets as other investment managers. Third, institutions will likely react similarly to exogenous signals, resulting in a herd. Because the signals institutions receive are usually more correlated than individual investors, institutional investors are more herd.

Several studies have found herding behavior carried out by mutual funds in developed countries (e.g., Blake et al., 2017; Celiker et al., 2015; Huo et al., 2023; Jiao & Ye, 2014; Kremer & Nautz, 2013; Lu et al., 2017; Wylie, 2005) or in emerging markets (e.g., Hsieh et al., 2011; Lakshman et al., 2013; Metawa et al., 2024).

### **Herding Behavior and Covid-19**

Christie and Huang (1995) use an irrational perspective of herding behavior and believe that investors imitate when market conditions are stressful. When facing uncertainty, investors experience concerns about making the wrong decision, potentially incurring losses. This psychological condition interferes with investors' ability to analyze rationally, so they are motivated to follow market consensus (i.e., herd) to reduce discomfort. Investors tend to follow market consensus in periods of high market volatility. On the other hand, Chang et al. (2000) argue

that herding behavior does not only occur when the market is stressed. They suggest that herding behavior is evident even during normal market conditions, and it becomes more significant when the market experiences extreme upward or downward volatility.

The pandemic has caused unprecedented economic and financial disruption (Gormsen & Koijen, 2020). The collapse of the real sector induced a surge in investor pessimism and negative sentiment in the capital market. In March 2020, financial markets experienced one of the most dramatic crashes in history, in which the S&P 500 index fell by 9.51 percent and 11.98 percent on 12 and 16 March 2020, respectively, which was the most significant daily decline since Black Monday on 19 October 1987, which fell by 20.4 percent (Imbert & Li, 2020; Wells, 2020). Similarly, the FTSE 100 dropped by 8.50 percent and 9.30 percent on 9 and 12 March 2020, respectively (Tew, 2020), and Australia's ASX 200 experienced its most considerable daily loss ever of 9.7 percent on 16 March 2020 (Hutchens & Chalmers, 2020). The Dow Jones index fell by 23.2 percent in the first quarter of 2020, whereas the German DAX index and the Japanese Nikkei index fell by 38 percent and 29 percent, respectively (Coy, 2020). Likewise, emerging countries have not been any exceptions and have been highly affected by the systemic impact of COVID-19 in the same way (Wasserman, 2020). According to the OJK report, the IDX Composite corrected by -5.09 percent in 2020.

Several studies have found that COVID-19 has increased financial market volatility and reduced investment returns (Ashraf, 2020; Bai et al., 2021; Lyócsa & Molnár, 2020; Narayan et al., 2022; Ullah, 2023). The upswing of volatility in financial markets encourages irrational behavior by following investment decisions taken by other investors. Increased uncertainty during the COVID-19 pandemic also threatens mutual fund performance. Efforts to maintain a positive reputation and compensation for relative performance are

carried out by imitating investment strategies implemented by other mutual fund managers. When the performance of most mutual funds plummeted, investment managers can "blame" market conditions as the primary driver of poor investment performance.

**H1:** There is mutual fund herding during the COVID-19 pandemic.

## **METHODS**

### **Sample and Data**

This research applies a quantitative approach by taking the population of open-end mutual funds in Indonesia. Mutual funds are investment companies that collect funds from individual investors and invest those funds in a potentially wide range of securities or other assets.

The sample is selected with the purposive sampling technique under the following criteria:

1. Indonesian mutual fund products registered with the Financial Services Authority (OJK) during the 2017-2022 period.
2. Equity fund.
3. Mutual fund products are denominated in rupiah.
4. Mutual funds were not declared bankrupt during the research period.

Based on these criteria, 171 stock mutual funds were obtained as samples by discarding two with extreme data, and the other two mutual funds were declared bankrupt in 2021. Net asset value per unit (NAVPU) data for calculating mutual fund returns used in this research was obtained from the following sites: (1) <https://bibit.id/>; (2) <https://www.bareksa.com/>; and [www.reksadana.ojk.go.id/](http://www.reksadana.ojk.go.id/), whereas the index data shares are collected from [www.yahoo.finance/](http://www.yahoo.finance/).

### **Analysis Model and Measurement**

There are three analysis models in this research. The first one is an analysis of all data for the whole study period of 2017-2020, the second one is an analysis of the period before COVID-19 (2017-2019), and the

last one is an analysis during the COVID-19 period (2020-2022). The statistical model for analyzing all models of analysis is as follows:

$$\text{Return dispersion}_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 |R_{m,t}^2| + \beta_3 \text{Covid 19} + \varepsilon_t \dots\dots\dots (1)$$

Based on equation (1), mutual fund herding can be detected from the coefficient of  $\beta_3$ . The negative value of  $\beta_3$  indicates that there is herding behavior during the COVID-19 period.

Meanwhile, referring to (Chang et al., 2000) we also used the basic model of analysis to examine herding behavior before and during COVID-19:

$$\text{Return dispersion}_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 |R_{m,t}^2| + \varepsilon_t \dots\dots\dots (2)$$

The coefficient  $\beta_2$  detects herding behavior. If  $\beta_2$  is negative and significant, it indicates that there is herding behavior when there is large price movement. Return dispersion is measured using cross-sectional absolute standard deviation (CSAD) (Chang et al., 2000).

$$V = \frac{1}{N_t} \sum_{i=1}^N |R_{i,t} - \bar{R}_t| \dots\dots\dots (3)$$

$R_{i,t}$  is the monthly mutual fund return calculated based on NAVPU changes. The market return measurement in this research utilizes two proxies from the IDX Composite and the LQ45 index<sup>2</sup>. The COVID-19 variable is a dummy variable with 0 for the period before COVID-19 (i.e., 2017–2019) and 1 for the period during COVID-19 (i.e., 2020–2022).

**Outer Model Analysis**

**Validity and Reliability Tests**

The validity of the research instrument was measured using three methods, namely convergent validity,

discriminant validity, and internal consistency reliability. Convergent validity is measured based on the loading value with an AVE value  $\geq 0.7$  (Hair et al., 2022).

Table 3 shows that the constructs for all variables meet the reliable criteria. This is indicated by the Cronbach’s Alpha and composite reliability values obtained from the SmartPLS estimation results. The resulting value is  $> 0.70$  as recommended criteria (Hair et al., 2022).

**RESULTS AND DISCUSSIONS**

**Descriptive Statistics**

Descriptive statistics aim to explain the sample’s data characteristics for all the variables studied. Table 1 summarizes the descriptive statistics for the entire study period (i.e., 2017-2022), pre-COVID-19, and during COVID-19.

Based on Table 1, the overall capital market performance experienced a downturn during COVID-19, with an average market return (LQ45) of  $-0.03\%$ . As measured by the Indonesia Composite Index (IDX Composite), market returns are substantially lower than before COVID-19. Consistently, the standard deviation of market returns increased during the COVID-19 period, which indicates that the variability of market returns increased during the COVID-19 period.

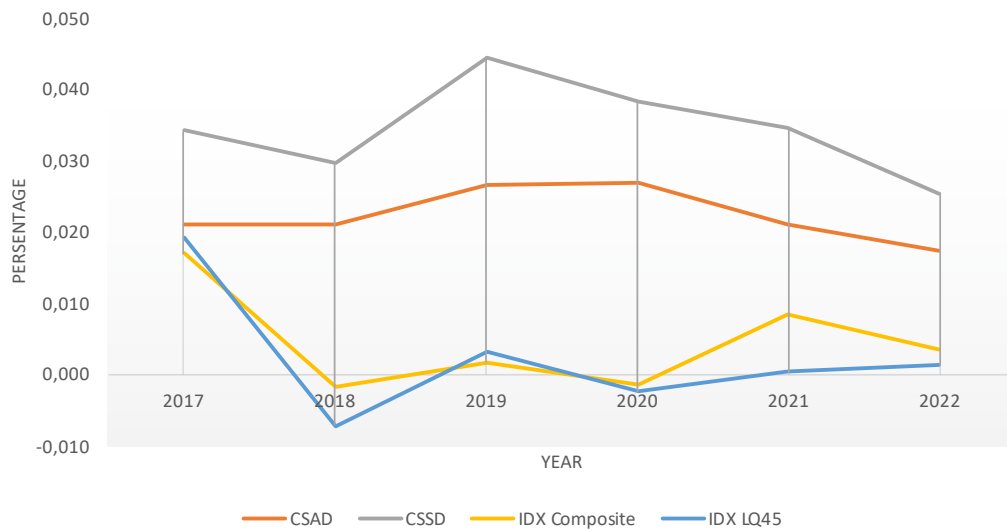
Table 1 shows that the lowest CSAD and CSSD values occurred before COVID-19 and the highest occurred during COVID-19. The average value of CSAD and CSSD during COVID-19 is slightly lower than before COVID-19. Trends in return dispersion and market returns are presented in Figure 1.

Figure 1 shows that before 2020, the lowest CSAD value occurred in 2018. Global uncertainty throughout 2018 caused stock market performance to decline, and investors tended to follow the

<sup>2</sup> LQ45 is an index of 45 shares most actively traded on the Indonesian Stock Exchange, with the most significant market capitalization value.

**Table 1. Descriptive Statistics**

Variable	N	Minimum	Maximum	Mean	Standard Deviation
<b>ALL PERIOD</b>					
CSAD	71	0.0102	0.7080	0.0224	0.0095
CSSD	71	0.0152	0.0973	0.0345	0.0147
R <sub>m</sub> (LQ45)	71	-0.21	0.12	0.0022	0.0496
R <sub>m</sub> (IDX Composite)	71	-0.17	0.09	0.0044	0.0391
<b>BEFORE COVID-19 PERIOD</b>					
CSAD	35	0.0102	0.0428	0.0229	0.0090
CSSD	35	0.0152	0.0737	0.0362	0.0150
R <sub>m</sub> (LQ45)	35	-0.09	0.09	0.0047	0.0340
R <sub>m</sub> (IDX Composite)	35	-0.06	0.07	0.0054	0.0279
<b>COVID-19 PERIOD</b>					
CSAD	36	0.0115	0.0708	0.0218	0.0010
CSSD	36	0.0183	0.0973	0.0328	0.0145
R <sub>m</sub> (LQ45)	36	-0.21	0.12	-0.0003	0.0615
R <sub>m</sub> (IDX Composite)	36	-0.17	0.09	0.0035	0.0479



**Figure 1. Trends of Stock Mutual Fund Return Dispersions and Market Returns**

market movements. Furthermore, since 2020, CSAD and CSSD have experienced a downward trend. It indicates that investors tend to adopt similar behavior, which resembles market performance.

It is also noteworthy from Figure 1 that the market return (IDX Composite and LQ45) experienced a decline in 2020, but not as sharply as in 2018, which reached -0.2 percent and -0.7 percent

for IDX Composite and LQ45, respectively. The positive performance of the Indonesian capital market during the COVID-19 pandemic was demonstrated in 2021 and 2022, in which the market has started recovering from the pandemic effect. Apart from that, fluctuations in the LQ45 index were also relatively more significant than the IDX Composite since LQ45 had a relatively high market capitalization value.

**Hypothesis Testing**

The first step in testing the hypothesis is to test herding behavior using all sample data (2017–2022). As shown in Table 2, the coefficient of the  $R_m^2$  positively influences CSAD. The  $\beta_2$  coefficient is 1.030 and 1.630 for LQ45 and IDX Composite, respectively. These positive relationships reflect that when market fluctuation is relatively high, the dispersion of mutual fund returns increases. It implies that herding behavior in mutual funds in stock failed to be found during the research period. On the other hand, the COVID-19 variable shows a negative coefficient and is significant at 5 percent.

This means uncertainty due to the COVID-19 pandemic drives down return dispersion and triggers herding behavior. Table 2 reports that the adjusted  $R^2$  value is higher when utilizing the IDX Composite as a proxy for market performance than LQ45. It may be because the IDX Composite covers all shares listed on the Indonesia Stock Exchange. Thus, it can capture a wider variety of data.

We conducted separate regressions to examine whether herding behavior occurred before and during COVID-19 because of market swings. Table 3 shows that before the COVID-19 period, the coefficient

**Table 2. Regression Result for 2017-2022 Period**

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 |R_{m,t}^2| + \beta_3 Covid\ 19 + \varepsilon_t$$

Independent Variable	$R_m$ : LQ45			$R_m$ : IDX Composite		
	Coefficient	t	Sig	Coefficient	t	Sig
Constant	0.021	12.496	0.000***	0.021	12.441	0.000***
$ R_m $	0.011	0.188	0.851	0.024	0.343	0.733
$R_m^2$	1.030	3.123	0.003***	1.630	3.103	0.003***
Covid19	-0.004	-2.140	0.036**	-0.004	-2.149	0.035**
Adj. $R^2$	0.405			0.428		
F-Value	16.878			18.490		
F-Sig.	0.000***			0.000***		

\*\*\*, \*\*, \* indicate significance level at 1%, 5%, and 10%, respectively.

**Table 3. Herding Behavior Testing Before and During the Covid-19 Pandemic**

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 |R_{m,t}^2| + \varepsilon_t$$

Independent Variable	$R_m$ : LQ45			$R_m$ : IDX Composite		
	Coefficient	t	Sig	Coefficient	t	Sig
<b>BEFORE COVID-19</b>						
Constant	0.020	5.990	0.000***	0.018	5.733	0.000***
$ R_m $	0.155	0.751	0.458	0.232	0.879	0.386
$R_m^2$	-0.689	-0.279	0.782	-0.707	-0.168	0.867
Adj. $R^2$	0.063			0.139		
F-Value	1.069			2.574		
F-Sig.	0.355			0.092*		
<b>DURING COVID-19</b>						
Constant	0.018	9.850	0.000***	0.019	11.458	0.000***
$ R_m $	-0.011	-0.208	0.836	-0.061	-0.903	0.373
$R_m^2$	1.141	4.048	0.000***	2.118	4.635	0.000***
Adj. $R^2$	0.735			0.735		
F-Value	45.724			45.753		
F-Sig.	0.000***			0.000***		

\*\*\*, \*\*, \* indicate significance level at 1%, 5%, and 10%, respectively.



of  $R_m^2$  was negative but insignificant statistically. It implies that mutual fund managers make investment decisions based on their private signals.

In contrast, during the COVID-19 period, we found that  $\beta_2$  (coefficient of  $R_m^2$ ) was positive and significant at 1 percent. It represents strong evidence that herding behavior does not occur when the market swing is large and that reverse herding behavior is visible.

**Robustness Check**

For robustness check, this research is also conducted by replacing CSAD with cross-sectional standard deviation (CSSD), initiated by Christie

and Huang (1995), as a proxy for return dispersion. We examined all sample data (i.e., 2017–2022) as well as before and during the COVID-19 period by employing a CSSD proxy. The formula for CSSD is as follows:

$$CSSD_t = \sqrt{\frac{\sum_{i=1}^N (R_{i,t} - \bar{R}_t)^2}{N_t - 1}}$$

The test results for the overall data are summarized in Table 4 below. The CSSD test gave similar results to CSAD, in which the evidence of herding behavior in stock mutual funds is not observed (as indicated by the coefficient of the  $R_m^2$ ). Likewise, the COVID-19 variable is negative and significant at 5 percent.

**Table 4. Regression Result for 2017-2022 Period**

$$CSSD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 |R_{m,t}^2| + \beta_3 Covid\ 19 + \varepsilon_t$$

Independent Variable	$R_m$ : LQ45			$R_m$ : IHSG		
	Coefficient	t	Sig	Coefficient	t	Sig
Constant	0.034	11.672	0.000	0.034	11.670	0.000
$ R_m $	0.011	0.115	0.909	0.012	0.095	0.924
$R_m^2$	1.347	2.382	0.020**	2.253	2.486	0.015**
Covid19	-0.007	-2.250	0.028**	-0,007	-2.266	0.027**
$R^2$	0.278			0.297		
F-Value	9.980			10.872		
F-Sig.	0.000***			0.000***		

\*\*\*, \*\*, \* indicate significance level at 1%, 5%, and 10%, respectively.

**Table 5. Herding Behavior Testing Before and During the COVID-19 Pandemic**

$$CSSD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 |R_{m,t}^2| + \varepsilon_t$$

Independent Variable	$R_m$ : LQ45			$R_m$ : IHSG		
	Coefficient	t	Sig	Coefficient	t	Sig
<b>BEFORE COVID-19</b>						
Constant	0.032	5.755	0.000	0.030	5.471	0.000
$ R_m $	0.222	0.635	0.530	0.330	0.732	0.469
$R_m^2$	-1.231	-0.296	0.769	-1.415	-0.197	0.845
$R^2$	0.036			0.085		
F-Value	0.592			1.490		
F-Sig.	0.559			0.241		
<b>DURING COVID-19</b>						
Constant	0.028	8.404	0.000	0.030	10.045	0.000
$ R_m $	-0.014	-0.143	0.887	-0.114	-0.948	0.350
$R_m^2$	1.480	2.905	0.007***	2.977	3.647	0.001***
$R^2$	0.589			0.598		
F-Value	23.654			24.587		
F-Sig.	0.000***			0.000***		

\*\*\*, \*\*, \* indicate significance level at 1%, 5%, and 10%, respectively.

We also conducted separate regressions before and during COVID-19 (see Table 5). The results are consistent with the previous one in Table 3, in which the coefficient of  $R_m^2$  is negative but not significant in the period before COVID-19 and is positively significant at a 1% level during COVID-19. The adjusted  $R^2$  is notably smaller than the previous result in Table 3.

### Discussion

Our research found that mutual fund managers tend to act rationally and not follow other investment managers when there are large market swings. So, in high market fluctuation, we failed to detect herding behavior. Instead, we discovered reverse herding, meaning that mutual fund managers make investment decisions based on their private information.

Investment companies make investment decisions on behalf of investors or shareholders, so they tend to be more careful in making investment decisions. In addition, investment companies are identified as professional investors with more information than retail investors, so their decision-making is also based on their private information. In high market volatility, institutional investors have the potential to get high returns when they exploit their private information instead of following the crowd.

The test for the period before COVID-19 showed a negative relationship between market fluctuation and return dispersion. However, our research could not show significant herding behavior by mutual funds. On the other hand, during the COVID-19 period, when there was a high market swing, we discovered reverse herding by mutual fund managers.

Reverse herding occurs when return dispersion increases once market returns are exposed to high price fluctuation. It indicates that investors or investment managers tend to make decisions independently and are not influenced by market

movements. The phenomenon of reverse herding behavior has also been observed in some previous research. Gębka and Wohar, (2013) discovered the reverse herding behavior in 32 countries in bearish and bullish markets. The U.S. market observed the same results (Economou et al., 2018). Choi and Yoon (2020) found reverse herding behavior in periods of low trading volume, bullish markets, and low volatility. Sheikh et al. (2023) observed reverse herding behavior in Pakistan during normal periods. It clarifies that reverse herding behavior also often occurs in other capital markets worldwide and thus supports our findings.

Further, Huynh et al. (2023) also discovered a reverse herding behavior in the Australian capital market, dominated by institutional investors at the end of the COVID-19 period. This phenomenon of reverse herding behavior. The positive attitude and overconfidence of investment managers could cause this behavior. In other words, mutual fund managers could be overconfident in their skills and knowledge, making investment decisions based on their private information. It is rational that, in a critical time such as during the COVID-19 pandemic, the mutual fund manager does not be reckless with their decisions. They would rather believe in their private information than rely on others' views and actions, which could be misleading.

Our research findings are similar to those of previous studies conducted by Eki Rahman and Ermawati (2020), Fransiska et al. (2018), Komalasari (2016), and Loang and Ahmad (2020), which concluded that herding behavior is not evident in the Indonesian capital market during high market fluctuation. Our research also aligns with Loang and Ahmad (2023), who did not observe herding behavior in the Indonesian capital market during COVID-19<sup>3</sup>.

However, we found another interesting fact: the COVID-19 pandemic has a negative effect on return dispersion as measured by either CSAD or CSSD.

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3 All of these researchers used market price fluctuation to detect herding behavior.

It implies that during COVID-19, the investment behavior of mutual fund managers tended to be more homogeneous compared to before COVID-19 period. It means that COVID-19 has triggered institutional investors to follow market movements. Mutual fund managers tend to herd when there is uncertainty due to COVID-19.

### **MANAGERIAL IMPLICATIONS**

Theoretically, this study implies exploring a more representative model for detecting herding behavior to minimize the discrepancy between empirical research and real phenomena. Researchers must establish the proxy of uncertainty to capture the herding phenomenon.

Practically, policymakers should increase disclosure regulations to reduce the potential for herding behavior and promote financial literacy to increase investment interest, especially in mutual funds. For investors, this research has implications for choosing mutual funds that consistently perform superiorly both in periods of high and low uncertainty. This consistency of performance implies that mutual fund managers tend to make investment decisions rationally and objectively based on their private information.

### **CONCLUSION**

This research examines herding behavior in stock mutual funds in Indonesia for 2017–2022. Then, we divide the whole study period into two subsamples: before COVID-19 (i.e., 2017–2019) and during COVID-19 (i.e., 2020–2022). Our research uncovered

two exciting lines of evidence. First, we found that COVID-19 encourages conformity in the capital market. The COVID-19 pandemic has caused high economic and financial uncertainty, triggering mutual funds to imitate market performance. So, it can be concluded that there is mutual fund herding during COVID-19.

Secondly, our research did not find herding behavior when high price changes occur. Instead, we found the reverse herding phenomenon in large market movements. It indicates that in high market swings, mutual fund managers are confident enough in their ability to improve their investment performance that they do not easily mimic the decisions made by other mutual funds. Our findings remain robust even when the measurement of return dispersion and market returns is changed. It could be noteworthy for future researchers, investors, and governments to oversee the Indonesian capital market efficiency.

We acknowledge that our empirical analysis is affected by some limitations. Although we have covered 171 types of mutual funds, we limit our sample to equity mutual funds. It may not represent all types of mutual funds. In addition, we can only access monthly mutual fund NAVPU data, while herding behavior is often done in shorter periods (for example, daily or weekly). Therefore, the results of our research can be influenced by methodological aspects. Therefore, further research is suggested to strengthen aspects of data collection methods, measure herding behavior, and expand research objects. ■

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