Herding of financial and non-financial Listed Companies: The Case of Indonesia

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Abstract

The capital market is susceptible to herding behavior due to various global crises in recent decades, potentially leading to stress in the stock market, including in Indonesia. The purpose of this study is to identify herd behavior, including asymmetric conditions during market-up and down from the finance and non-finance industry listed in the Indonesia Equity Market. This study employs a cross-sectional dispersion approach to capture herding by employing daily closing stock price data from January 2015 to December 2022. The findings denote that herding behavior was not observed in the finance or non-finance sectors either before or during the COVID-19 pandemic. The asymmetric herding test results reveal that herding behavior is only identified in the non-finance sectors when the market is down. These results could aid capital market authorities in anticipating collective actions to uphold stability in the Indonesia non-finance listed companies, particularly during periods of heightened volatility amidst market downturns.

Keywords: herding behavior, asymmetric herding, COVID-19 pandemic; finance and non-finance companies

Introduction

Fluctuations in stock prices within the capital market mirror the actions of investors. In understanding the factors influencing investor conduct in this market, two contrasting perspectives have emerged. One is rooted in conventional finance theory, emphasizing rationality and the efficiency of capital markets. In addition, known as behavioral bias, diverges from the efficient capital market hypothesis by asserting that psychological factors play a dominant role in investors' decision-making processes within the capital market (Economou, 2020; Rahman & Ermawati, 2019). Moreover, the hypothesis of an efficient capital market asserts that market efficiency is achieved when the prices of all securities traded in the capital market completely incorporate the available information. The occurrence of financial crises globally, characterized by elevated uncertainty, has led to the emergence of various market anomalies, challenging and disproving the accuracy of market assumptions. As behavioral biases have become more common, the relevance of efficient capital markets to the current situation has diminished, creating challenges for investors seeking to benefit from diversification and optimal asset allocation (Barberis & Thaler, 2002). The phenomenon of

herding behavior, witnessed in various global markets, has been a subject of intense discussion amid consecutive global crises (Economou, et al 2011; Mobarek, et al 2014). This is linked to the tendency of investors to mimic the decisions of others can hinder their ability to benefit from optimal asset allocation and diversification, potentially leading to increased fluctuations in the capital market (Chiang & Zheng, 2010; Economou, 2020).

The exploration of herd behavior took place well in advance of its public recognition (Keynes, 1936; Le Bon, 1895; Veblen, 1899), nevertheless, the term "herding" has not been employed. The study of herd behavior in capital markets gained prominence after the investigations conducted by Banerjee (1992) and Bikhchandani, et al (1992) on herding behavior in financial markets. The emergence of herd behavior is a consequence of interactions among investors linked to their access to information, leading to potential errors in their investment choices (Chiang & Zheng 2010), irrespective of the personal information in possession and opting to emulate the doings of peers in the market (Javaira & Hassan 2015; Youssef 2022). Built on the premise that individuals possess superior information and comprehension of the market, particularly accentuated in times of market strain (Litimi et al., 2016). The prevalence of herd behavior in the equity market is widely acknowledged as the main factor contributing to market instability and volatility (Deng, et al. 2018; Komalasari et al. 2021; Spyrou 2013). The notion that herding is widespread prevails, despite the scarcity of concrete data on the subject (Welch, 2000). Many scholars believe that the phenomenon of herding is prevalent across numerous capital markets (Deng et al., 2018), encompassing both developed and emerging capital markets, the presence of this phenomenon, particularly during crises, is unevenly spread and does not occur uniformly across all capital markets.

Investigation into herd behavior in the capital market consists of two primary types. The initial classification involves studying herding behavior among specific investor types utilizing micro or ownership data (Javaira & Hassan, 2015). The second classification centers on examining market-wide herd behavior using aggregate prices and overall market activity data (Aslam, et al. 2021; Mobarek et al. 2014; Spyrou 2013; Ah Mand and Sifat 2021). This study employs aggregate price data from the financial and non-financial sectors within the Indonesian stock market. Aggregate herding behavior is fascinating to investigate since it focuses on the aggregate behavior of investors, who prefer to form their investment decisions influenced by market trends (Spyrou, 2013). This behavior reflects investors' tendency to follow overall market movements on trading days. By examining the overall behavior of investors, it can be determined whether herding behavior is present in the capital market as a whole (Chang et al., 2000; Christie & Huang, 1995). It contrasts with herding behavior in specific investors, where individuals or groups of investors simultaneously concentrate on particular stocks while overlooking other stocks with similar characteristics (Javaira & Hassan, 2015).

Numerous experts are keen on exploring the presence of collective herding tendencies across global capital markets, encompassing developed capital markets and emerging markets. Christie & Huang (1995) identified the presence of herd behavior in the US capital market spanning from 1962 to 1988, yet they observed an absence of herding behavior. Hwang & Salmon (2004) undertook a study on herding in the United States and concluded that herding behavior emerges during periods of market stress. Chiang & Zheng (2010) examined developed markets (Australia, France, Germany, Hong Kong, Japan, England, and the United States) and emerging markets (Argentina, Brazil, Chile, and Mexico). They found evidence of herding behavior in nearly all developed

markets, except the United States and emerging markets, where such behavior was observed only during periods of market stress. Celik (2013) found no evidence of herding behavior in the United States, England, Germany, France, Netherlands, Austria, Hong Kong, Argentina, Brazil, Mexico, and Malaysia. Economou et al. (2018) similarly did not detect herding behavior in the capital markets of the United States, England, and Germany. However, herding behavior was observed solely during the crisis in England, primarily driven by fear factors. Aawaar et al. (2020) identified herding behavior across all capital markets within the African region. Javaira & Hassan (2015) did not observe herding behavior in Pakistan during 2002 – 2007. Bui et al. (2015) identified herding behavior in the Indonesian and Malaysian capital markets before and during economic crises, but observed its absence in the Philippines and Vietnam. Padungsaksawasdi (2020) identified occurrences of herding behavior in the Thai capital market across various periods. Noviliya & Prasetiono (2017) identified herding behavior in Indonesia and China but did not observe it in Singapore and Japan.

According to the research findings, herding tendencies prevail to a greater extent in emerging capital markets compared to developed capital markets (Chang, et al. 2000; Christie and Huang 1995), and the tendency for this behavior is more prominent in periods of market stress marked by elevated levels of volatility and uncertainty. Nevertheless, this phenomenon is not uniformly observed across all countries (Economou et al. 2018; Huang & Wang 2017; Javaira and Hassan 2015). For example, there was a notable degree of market volatility amid the global upheaval caused by the COVID-19 pandemic, which began in late 2019 and reached its peak in early 2020. The majority of research findings indicate that the Covid-19 pandemic fosters collective behavior, as observed in Eastern Europe (Fang et al., 2021), India (Dhall & Singh, 2020), the United States, America, Europe, Asia (Chang, et al. 2020), and Australia (Espinosa-Méndez & Arias, 2021), Amman (Aldeki, 2022), Indonesia (Sadewo & Cahyaningdyah 2022) capital market. During the COVID-19 pandemic in Indonesia, herd behavior was not observed in contrast to findings in other research (Resindra & Lubis, 2022; Warganegara & Warganegara, 2022).

Aggregate herding behavior can arise in asymmetric scenarios during downward and upward market trends. This type of asymmetry occurs during periods of market escalation or decline, enabling a distinction between optimistic and pessimistic perspectives in the market (Christie & Huang, 1995). Divergent herding patterns can emerge due to diverse reactions of investors to market fluctuations. For instance, some investors advocate purchasing stocks during market downturns and selling equities when the market strengthens as the optimal strategy (Neal & Wheatley, 1998).

From financial market perspectives related to investment and speculation, investors commonly engage in buying stocks amid price surges and selling them during price declines, believing that aligning with aggregate market movements can mitigate risks (Prechter & Parker, 2007). This contrasts with the economic market perspective, which posits that when stock prices decline, demand for shares will also decrease, and vice versa (Poterba, 2001). However, in reality, the opposite holds (Prechter & Parker, 2007). The potential influence of uneven herding relies heavily on the performance of the market, the volatility of the domestic capital market, and the sentiment of investors. (Prechter, 2001) argued that investors are driven to engage in asymmetric herding by the dual objective of maximizing profits and minimizing losses. Several studies have identified instances of herding behavior during market downturns (Mobarek et al. 2014; Sadewo &

Cahyaningdyah 2022; Vidya, et al. 2023), and additional studies observe a tendency for herd behavior in periods of market-up (Bui et al., 2015; Chen, 2013; Vidya et al., 2023).

Studying herding behavior presents a fascinating research avenue in both financial and non-financial domains, particularly within the Indonesian capital market. This market is classified as an emerging capital market, and there is a significant lack of research identifying the occurrence of herd behavior within it. The finance industry is particularly susceptible to shifts in economic circumstances, especially amid the uncertainties of the COVID-19 pandemic, in contrast to non-financial sectors. Dey & Siddiqui (2020) reported that the ongoing pandemic has significantly affected different sectors in India, with the extent of the impact differing across sectors. Aawaar (2020) indicated that the financial services industry is not immune to the repercussions of COVID-19, given its connections to the broader economy, its operations, and its interrelations with other sectors. Mishra & Mishra (2023) research findings indicate the existence of herd behavior in the financial sector of the Indian capital market. Ah Mand & Sifat (2021), discovered herd behavior in the financial and manufacturing domains within the Malaysian capital market. Koputra & Mahadwartha (2021) observed an absence of herding behavior in the non-financial (infrastructure, utilities, and transportation) sectors in Indonesia.

The goal of this research is to identify herd behavior in both the financial and non-financial sectors within the Indonesian capital market. This includes analyzing data from full periods, before and during the COVID-19 pandemic, as well as examining asymmetric herding under various market conditions—specifically during market-up and down from 2015 to 2022. Utilizing daily closing share prices for all industry stocks listed on the Indonesia equity market, this study sets itself apart by comprehensively utilizing market activity data to illustrate the prevalence of herd behavior, including asymmetric patterns, in both finance and non-finance industries. This approach, encompassing market fluctuations, distinguishes the study from existing research. The results of this study could enhance the behavioral finance literature and provide valuable insights to regulatory authorities overseeing the Indonesian equity market, aiding in the formulation of rules to anticipate and manage herd behavior in both financial and non-financial industries, particularly during market downturns.

Research Method

This study conducts fundamental research that employs a quantitative methodology to identify collective herding behavior within both the finance and non-finance sectors, including the examination of asymmetric herding in the capital markets of Indonesia. The data utilized for this investigation comprises secondary data in the form of historical daily closing prices of all companies within the finance and non-finance industries listed on the Indonesian capital markets, spanning from January 2015 to December 2022. The study period was chosen due to the unstable global economic conditions resulting from various international issues, such as the trade war between the United States and China, the conflict between Russia and Ukraine, and other factors. Additionally, the economic and financial crisis exacerbated by the COVID-19 pandemic in 2020 caused market stress, making it a compelling subject for research.

The total population in this research is 473 companies, consisting of 81 financial industry companies, while the non-financial industry comprises 392 companies. To achieve the research objectives, determining an appropriate sample size is crucial, as it

significantly impacts the estimation and interpretation of the data. Consequently, a purposive sampling approach was employed in this study adhering to the following criteria: (1) the company listed its shares in the financial and non-financial sectors before 2015; (2) throughout the study period, the company's shares remained actively and consistently traded within each sector without any suspension or delisting. The sample size is 436 firms, with 76 firms from the finance industry and 360 from the non-finance industry.

The detection of herd behavior, including asymmetric herding in both up and down market conditions within the finance and non-finance industries listed in the Indonesia equity market, is facilitated through the utilization of the cross-sectional absolute deviation (CSAD) (Christie & Huang, 1995) and a nonlinear regression model (Chang et al., 2000). This model captures the relationship between CSAD and market return by considering the entire distribution of market returns. The structured data analysis method is as follows:

$$CSAD_{k,j} = \sum_{j=1}^{N} \frac{|R_{i,j} - R_{m,j}|}{N} \quad \text{.. (1)}$$

CSADk,t represents the cross-sectional absolute deviation of market k on day j. R_{ij} denotes the return on stock i on day j, while $R_{m,j}$ signifies the stock market return, defined as the same weighted average return for all individual stocks on day j. N stands for the sum of all equity on the stock market on day j. To detect herding behavior throughout the entire period, both before and during the COVID-19 pandemic, the model (Chang et al., 2000) will be employed. This model is non-linear and illustrates the connection between $CSAD_{k,j}$, and market returns by utilizing the complete distribution of market returns. The corresponding equation is as follows:

$$CSAD_{k,j} = \phi + u_1|R_{m,j}| + u_2 R_{m,j}^2 + e_j \quad \text{.. (2)}$$

According to the Capital Asset Pricing Model (CAPM) assumption, rational asset pricing predicts that the variability of stock returns will exhibit a direct linear correlation with absolute market returns, attributed to the distinct responsiveness of individual stocks to market fluctuations (Chang et al., 2000). The introduction of herding behavior during extreme market conditions is anticipated to disrupt this correlation, resulting in a non-linear decrease, with the coefficient u_2 expected to be negative (indicating an inverse relationship with decreasing values of $CSAD_{k,j}$. Consequently, the detection of herding behavior is contingent upon a negative and statistically significant u_2 coefficient.

The detection of asymmetric herding behavior in different market contexts will be carried out using the model created by (Chang et al., 2000), which is consistent with the approaches adopted by (Economou, 2020; Gleason et al., 2004; Mobarek et al., 2014). The model utilizes a standard form equation that incorporates a dummy variable, as illustrated below:

$$CSAD_{k,j} = \phi + u_1 D^{up}|R_{m,j}| + u_2(1 - D^{up})|R_{m,j}| + u_3 D^{up} R_{m,j}^2 + u_4(1 - D^{up})R_{m,j}^2 + e_j \quad \text{..... (3)}$$

In this context, D^{up} serves as a dummy variable assigned a value of 1 on days with positive market returns and 0 on days with negative market returns. The evaluation of u_3 and u_4 suggests a negative and significant orientation, signifying asymmetrical herding behavior during both up and down market movements.

Result and Discussion

Descriptive statistics are employed in this study to summarize the characteristics of the sample, aiming to identify herding behavior, including the presence of asymmetric herding. Table 1 displays the descriptive statistics for both the finance and non-finance sectors listed on the Indonesian equity markets.

Table 1. The Descriptive Statistics for CSAD and Rm

	Finance Industry		Non-Finance Industry	
	CSAD	R_m	CSAD	R_m
Mean	1.853	0.076	1.922	0.065
Median	1.752	0.066	1.862	0.101
Maximum	7.249	4.708	6.638	3.997
Minimum	0.006	-3.241	0.005	-4.032
Std. Dev.	0.622	0.717	0.496	0.634
Observations	1940			

Source: Processed through the formula 1 and the average of the market returns, 2023

Table 1 revealed that the non-finance sector exhibited the highest average CSAD, standing at 1.92%, while the finance industry recorded the lowest figure at 1.85%. The elevated average CSAD in the non-finance sector suggests a significant divergence of individual assets from the overall market return on a daily trading basis. Additionally, the non-finance industry displayed the highest average daily market return, amounting to 0.08% in Table 1. Despite this, the non-finance industry's standard deviation is 0.50% comparatively lower than that of the finance industry, reaching 0.62%. This implies that the finance industry holds greater appeal for investors and speculators, who can contribute to increased market volatility and risk.

Table 2. Results of the Herding Behavior Test for Both Financial and Non-Financial Listed Firms

	Finance Industry			Non-Finance Industry		
	Coeff.	Std. error	t-value	Coeff.	Std. error	t-value
Panel A: Entire duration (5 Jan 2015 – 30 Des 2022)						
Constant	1.491	0.025	59.45***	1.623	0.026	63.05***
$\|R_{m,j}\|$	0.541	0.059	9.17***	0.563	0.072	7.81***
$R_{m,j}^2$	0.145	0.030	4.85***	0.104	0.041	2.52**
R^2 adj. (%)	45.00			49.48		
Panel B: Prior to the Covid-19 Period (5 Jan 2015 – 28 Feb 2020)						
Constant	1.437	0.034	42.25***	1.558	0.033	46.67***
$\|R_{m,j}\|$	0.447	0.129	3.46***	0.552	0.123	4.49***
$R_{m,j}^2$	0.296	0.105	2.83***	0.162	0.106	1.53
R^2 adj. (%)	38.39			43.33		
Panel C: Covid 19 Period (02 Maret 2020 – 30 Des 2022)						
Constant	1.691	0.045	37.28***	1.799	0.032	57.00***
$\|R_{m,j}\|$	0.329	0.072	4.54***	0.387	0.080	4.83***
$R_{m,j}^2$	0.178	0.028	6.24***	0.126	0.046	2.73***
R^2 adj. (%)	48.46			59.99		

Note: *, **, *** Indicates significance at the 10%, 5%, and 1% levels, respectively.
Sources: The information derived from equation 2, negative and significant u_2 signifies the existence of herding behavior, 2023

Table 2 presented above illustrates the forecast outcomes about the presence of herding behavior within both financial and non-financial sectors. These predictions are derived from the (Chang et al., 2000) method, specifically equation 2, and are scrutinized using the Newey and West consistent estimator. In the entire duration (A panel), the empirical tests cover the entire research period, encompassing both financial and non-financial industries in the Indonesian capital market on an aggregate scale. The results of these tests reveal that the u_1 coefficient is positive and significant for both industrial groups, affirming the anticipated correlation between CSAD and market returns.

Conversely, the test outcomes for the u_2 coefficient indicate positivity and statistical significance in both financial and non-financial sectors, suggesting the absence of detected herding behavior. Panel B displays the outcomes of herding behavior testing conducted in both financial and non-financial sectors before the COVID-19 pandemic. The findings indicate that the coefficient u_2 is positively significant in the financial sector but lacks significance in the non-financial sector. This implies that herding behavior is not evident in either sector. The outcomes of practical examinations conducted amid the COVID-19 pandemic, specifically in panel C, suggest that there is an absence of herd behavior observed in both the financial and non-financial sectors. This is evidenced by the noteworthy and positive coefficient u_2.

The unobserved tendency for individuals to follow others in the financial and non-financial domains, as observed in the Indonesian equity market throughout the entire study duration, before and following the COVID-19 pandemic, indicates that the overall fluctuations in stock prices within these sectors were not significant. In the financial and non-financial sectors, the spread of stock returns and market returns exhibits a straightforward correlation in line with conventional asset pricing, making it challenging to identify herding behavior. This difficulty arises from the observation that detecting herd behavior usually involves significant price fluctuations that have the potential to change a linear correlation into a non-linear one (Gleason et al., 2004; Mobarek et al., 2014).

The capital market in Indonesia exhibits some distinctions compared to those in other nations, as not all stocks undergo daily active fluctuations in both financial and non-financial sectors. Several research papers indicate that herd behavior in the Indonesian stock market often involves the utilization of actively traded stocks, typically high-performing stocks with significant market capitalization. These stocks are usually sought after by investors, leading to substantial price fluctuations during market stress triggered by crises or events like the COVID-19 pandemic. This dynamic transforms the linear relationship into a non-linear one (Rahman & Ermawati, 2019; Sadewo & Cahyaningdyah, 2022).

The examination outcomes regarding asymmetric herding across various conditions in the market in Table 3 show that herd behavior is not observed in the financial industry when the market experiences fluctuations, even though the coefficient u4 is negative, it's not significant. This situation indicates that investors in the financial sector refrain from reacting excessively to market fluctuations, whether the market is characterized by optimism or pessimism. Conversely, herding behavior is indeed identified in non-financial sectors when the market is down, rather than up. These findings align with previous studies (Economou et al., 2015; Mobarek et al., 2014; Philippas et al., 2013), indicating a tendency for asymmetric herding to manifest during market downturns. Interestingly, the findings of this study discord with the research conducted by (Bui et al., 2015; Chen, 2013; Economou et al., 2011; Gleason et al., 2004;

and Tan et al., 2008), which suggested that asymmetric herding is more likely to occur in up markets.

Table 3. Displays the Findings of Asymmetric Herding Behavior

	Finance Industry			Non-Finance Industry		
	Coeff.	Std. error	t-value	Coeff.	Std. error	t-value
Konstanta	1.479	0.025	59.17***	1.629	0.025	64.05***
$D^{up}\left\|R_{j,t}\right\|$	0.689	0.065	10.52***	0.524	0.099	5.31***
$(1-D^{up})\left\|R_{j,t}\right\|$	0.494	0.074	6.66***	0.474	0.057	8.27***
$D^{up}R_{j,t}^2$	0.138	0.034	4.05***	0.249	0.077	3.23***
$(1-D^{up})R_{j,t}^2$	0.046	0.038	1.19	-0.060	0.023	-2.61**
R^2 adj. (%)	48.43			54.85		

Note: *, **, ***Significant at the level 10%, 5%, and 1%

Sources: The information derived from equation 3, negative and significant u_3 and u_4, signify the existence of herding behavior in asymmetric, observed both during market upswings and downturns, 2023.

Gleason et al. (2004) mention that during a market downturn, investors tend to mimic market trends. A significant drop in the market can create instability in financial systems, leading to substantial market shifts, and posing a notable risk (Demirer & Kutan, 2006) to the non-financial sector. In situations where the market is on a decline, asymmetric herding in non-financial industries is believed to emerge. This phenomenon takes place when investors, swayed by a flood of unfavorable news, become alarmed and collectively opt for investment decisions that mirror current market trends, demonstrating herd behavior.

Conclusion

The phenomenon of herding behavior has gained widespread attention following various global crises. This has sparked the interest of researchers from multiple countries, leading them to investigate herd phenomena in diverse financial markets, including the emerging equity market of Indonesia. The goal of this study is to detect herd behavior in both the financial and non-financial sectors of the Indonesian equity market, including asymmetric herding across diverse market scenarios, particularly in instances of the market up and down. The findings of the study indicate the absence of herd behavior in both the financial and non-financial sectors within the Indonesian stock market. This observation holds for the entire research duration, including periods before and during the Covid-19 pandemic. The results of the asymmetric herding test reveal that herding behavior is not present in the financial sector. However, in the non-financial sector, it is only identified during market downturns and remains undetected when market-up.

The outcomes of this study will offer valuable insights for decision-makers in the Indonesian financial market, aiding them in preserving the stability and resilience of the market amidst diverse crises and economic challenges. These challenges may trigger herd behavior, leading to heightened levels of volatility and uncertainty. Consequently, market instability may hinder investors from effectively leveraging appropriate asset allocation and diversification, while companies may encounter challenges in securing funding from the capital market. This research contributes to the existing body of knowledge in behavioral herding research and, more broadly, in behavioral finance, offering novel perspectives. This research has several limitations, particularly regarding the challenges

in accessing financial and non-financial industry data beyond Indonesia, particularly within the ASEAN region for comparison with Indonesia's capital market. This limitation is attributed to constraints in data access and limited research funding. Consequently, this study welcomes discussions and input from readers to enhance further exploration of the subject matter. It is suggested that future researchers incorporate more countries for comparison to enrich the research findings.

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