



RESEARCH ARTICLE

The Impact of Herd Behavior on the Vietnamese Stock Market

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ABSTRACT

This study examines the impact of herding behavior on the Vietnamese stock market using a herding behavior testing model from 2008 to 2022. Findings from the model indicate that trading volume significantly influences herding behavior in the market. As trading volume increases, profit dispersion also, albeit at a decreasing rate. This process enhances stock liquidity and furnishes investors with more information to refrain from trading solely based on personal judgment. In addition, the Granger causality test reveals that the causal relationship between herding behavior and trading volume is a one-way relationship with herding behavior influencing changes in trading volume. Based on the research findings, we suggest several policy implications for regulatory agencies, businesses, and market investors.

INTRODUCTION

Herding behavior in the stock market has captured the interest of numerous researchers and financial market regulators. According to Banerjee (1992), individuals who engage in herding behavior tend to base their investment decisions on imitating other investors rather than relying on personal information. This tendency becomes particularly prominent during periods of financial market stress, leading to more widespread herding behavior and deeper crashes (Devenow and Welch, 1996). Consequently, investors are forced to trade at inefficient prices (Christie and Huang, 1995). In the increasingly complex global economic and political context and the process of deep international integration, the stock market plays a crucial role in the economic development of a country by reflecting its financial health. A stable stock market indicates a strong economy, while a declining market signifies economic challenges. In times of economic growth, company profits typically rise, whereas during a recession, the stock market tends to decline (Ah Mand *et al.*, 2023; Rashid *et al.*, 2023). In Vietnam, the stock market serves as a vital channel for medium and long-term capital channel in the economy. By the end of 2023, the VN-Index index reached 1,129.93 points, recording an increase of more than 12% compared to the end of 2022. Market liquidity reached over 17,500 billion VND per session, showing the active participation of investors. The estimated stock market capitalization rose to nearly 6 million billion VND, a 9.5% increase from the end of 2022. Notably, the number of new investors entering the market increased sharply, reaching more than 355,600 thousand accounts, bringing the total securities accounts to nearly 7.4 million (Yen Nhi, 2024).

However, during periods of strong market fluctuations such as the global financial crisis in 2008 and the COVID-19 pandemic (2020-2021), the stock market continuously decreased due to the sell-off activities of domestic investors. In 2008, the Vietnamese stock market continuously reduced, with the VN-Index

reaching its lowest point of 288 (December 11, 2008). In 2020, under the impact of the COVID-19 pandemic, the domestic stock market was severely affected, causing the VN-Index to decrease from 1,000 points at the end of 2019 to 645 points at the end of March 2020. This shows that investors are less inclined to rely on personal analysis and are often easily influenced by the actions of other investors. In other words, herd mentality is having a significant impact on the Vietnamese stock market.

In this paper, we study the impact of herding behavior on the Ho Chi Minh City Stock Exchange (HOSE) from January 2008 to December 2022 using the Cross-sectional Absolute Standard Deviation (CSAD) method of Chang, Cheng, and Khorana (2000). Using the CSAD method becomes more appropriate, especially when the study spans a period and witnesses many fluctuations in the market from 2008 to 2022, because this behavior is shown in both bullish and bearish markets. However, the behavior will be more evident in bearish markets, especially since the financial crisis in 2008 until now. In addition, this method also allows us to assess the level of influence of independent variables on dependent variables, thereby indicating the direction of impact of each independent variable on dependent variables, suitable for the period of many large fluctuations in the Vietnamese stock market. The impact of herd behavior on the stock market can be identified through signs such as loss of independence in investment decisions, increased risks, and reduced market efficiency. Recognizing these signs can help market participants filter information and develop more appropriate investment strategies. At the same time, it supports management agencies in designing and developing appropriate macro-prudential policies to minimize systemic risks and ensure financial market stability.

2. LITERATURE OVERVIEW

The study by Devenow and Welch (1996) is one of the pivotal studies that evaluate herd behavior into two main groups: irrational herd behavior and rational herd behavior. First, irrational herd behavior occurs when investors lack information and do not fully assess risks, blindly following the actions of others without considering their previous beliefs and opinions. This action leads to inaccurate asset pricing and can lead to market inefficiency (Froot et al, 1992; Hirshleifer et al, 1994). Second, rational herd behavior includes information-based investment behavior, investors with similar investment goals in a common stock will react similarly to company characteristics and information. Bikhchandani, Hirshleifer, and Welch (1992) also emphasized the role of informational efficiency in promoting rational herding behavior. Herding investors often rely on the actions of other investors when they perceive positive signals from the market and see that those they follow are investing. They will act on those signals, especially in situations of asymmetric or uncertain information. In addition, rational herding behavior comes from investors who want to protect their reputation. They tend to copy the actions of their peers when they lack confidence in their abilities and ignore private information to maintain a positive image in the market (Scharfstein & Stein, 1990; Graham, 1994; Trueman, 1994).

There have been many empirical studies on herding behavior in the world. These methods, especially the method based on the trading patterns of a specific group of investors in the market and the method using the dispersion of the returns of securities compared to the returns of the market, have been applied to test herding behavior in the financial field. In 1992, Lakonishok, Shleifer and Vishny studied the trading behavior of institutional investors, focusing on the herding phenomenon through the method based on the trading patterns of a specific group of investors in the market. The study used a new data set on the end-of-quarter portfolios of 769 pension funds from 1985 to 1989, managed by 341 different money management organizations to assess the potential impact of trading on stock prices. The results show that, at the quarterly frequency level, the authors do not find much evidence of herding or trading with significant positive feedback from pension funds, except for small stocks. At the same time, there is no strong correlation between changes in the fund's stock portfolio and abnormal returns.

Christie and Huang (1995) proposed a cross-sectional standard deviation of return (CSSD) approach during periods of strong market price movements. They studied herding behavior in equity returns using

daily data for NYSE and Amex companies (July 1962–December 1988) and monthly data for NYSE companies (December 1925–December 1988). This method reflects the overall efficiency of the market and assesses the dispersion of returns to see whether individual judgments are influenced and reduce the market consensus. The results show that higher dispersion around market returns is more frequent during significant price movements, which is counter to the herding behavior view. In addition, the study also investigates the possibility of profits being concentrated in companies with common characteristics instead of the average of the entire market.

The most prominent empirical study on herding behavior is the study by Chang, Cheng and Khorana (2000) using the cross-sectional absolute deviation method - CSAD (1) to test herding behavior by examining the non-linear relationship between the dispersion of individual asset returns and the return of the market portfolio, through observing the entire process of dispersion of market returns over a certain period of time, seeking to eliminate the obstacle when choosing criteria to detect significant fluctuations in the market.

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

In Vietnam, to identify herd behavior in the market, To Trung Thanh (2011) developed a model based on the method of Chang, Cheng, and Khorana (2000) to further study the characteristics of herd behavior in different market conditions. The author used 2 more models below ((2), (3)) when studying 8 random stock codes (including BBC, REE, GIL, SAM, TRI, TS4, SAV and AGF) ¹ from September 2002 to March 2011 with a total of about 2000 observations on the HOSE floor, proving that during periods of strong market fluctuations or crises, herd psychology appears in the Vietnamese stock market, especially on days when the market increases strongly.

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

$$\text{nếu } R_{m,t} > 0 \quad (2)$$

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

$$\text{nếu } R_{m,t} < 0 \quad (3)$$

Herd behavior in the Vietnamese stock market is more clearly demonstrated in the research paper of Doan Anh Tuan and Hoang Mai Phuong (2016). Using the Chang, Cheng, and Khorana (2000) model and estimating the regression equation using the GARCH model, the author performed a regression of the average dispersion of the return rate of securities traded on HOSE from June 1, 2007, to November 30, 2015. The empirical results showed that the regression coefficient reached a negative value and had a high statistical significance (1% level), proving the existence of herd behavior and especially appeared more strongly in the down market than in the upmarket.

In most previous empirical studies, the quantitative results indicate the negative impact of herding behavior on the stock market, however, there is little mention of when this behavior appears most often. Therefore, this study examines the presence of investor herding behavior in the Vietnamese stock market using the CSAD method. Analyzing the degree of profit dispersion of stocks in the portfolio compared to the total market profit, if investors believe in the general expectation of the market, the profit of individual stocks will not have a large difference compared to the total market profit. The choice of the CSAD method is because this method considers the relationship between herding and the market

¹ 8 stock codes: BBC (Bibica JSC), REE (Refrigeration Electrical Engineering JSC), GIL (Gilimex JSC), SAM (Sam Holdings JSC), TRI (Tri Viet Securities JSC), TS4 (Seafood JSC No. 4), SAV (Savimex JSC), AGF (AGIFISH JSC)

as non-linear, which is consistent with reality. At the same time, this method is suitable for the research period from 2008 to 2022, a period with many large fluctuations in the Vietnamese stock market.

3. RESEARCH METHODS

3.1. Research data

Research data is collected based on daily listed stock prices on the Ho Chi Minh City Stock Exchange (HOSE) from 2008 to 2022. A total of 15 stockcodes on the HOSE² were selected based on specific criteria to accurately represent the market, including: (i) Characteristic of the company's operating industry groups; (ii) Long-term and stable presence before 2008; (iii) Characteristic of the stages and cycles of market fluctuations, increases and decreases. After selecting the group of authors to analyze closing price data in 3,739 trading days, during this period, the Vietnamese stock market had a low weekly interest rate of 0.13166%/week, or 6.86%/year at the Ho C hi Minh Stock Exchange (HOSE).

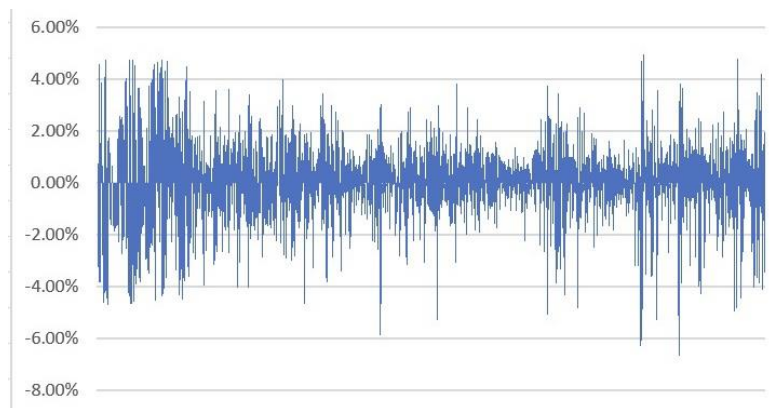


Figure 1: Interest rate fluctuations of stocks on HOSE
Source: authors' calculations

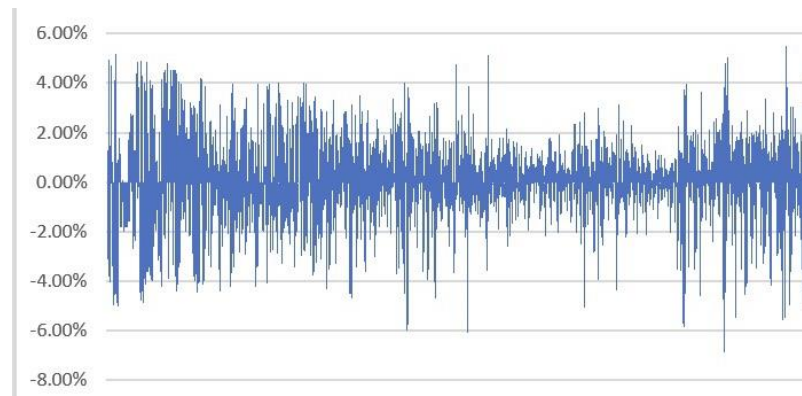


Figure 2: Interest rate volatility of the selected group stock portfolio
Source: authors' calculations

The observation period lasts from January 2008 to December 2022 to use the most updated data to accurately assess and reflect the current state of herd behavior in the Vietnamese stock market. Specifically, the raw data are stock prices and daily VNINDEX values, which are processed to calculate

² 15 selected stock codes include: PET; FPT; PVD; TCM; SAM; KDC; HPG; ACB; SSI; VIP; VSC; CII; REE; NTL; ITA

individual stock returns and total market returns. The average return of individual stocks is calculated by the following formula:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (4)$$

Where $P_{i,t}$ is the daily closing price of stock i (at time t); $P_{i,t-1}$ is the closing price of stock i on the previous day (at time -1); $R_{i,t}$ is the profit to be calculated of stock i at time t

The average interest rate of the whole market ($R_{m,t}$) is determined based on the change of the VNINDEX index at the end of each trading day compared to the previous trading day, specifically the formula:

$$R_{m,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (5)$$

With P_t being the value of the VN-INDEX index at market closing time t ; P_{t-1} being the value of the VN-INDEX index at market closing time $t-1$

3.2. Model for testing herd behavior in the Vietnamese stock market

As mentioned, we use the CSAD method as a proxy for herd behavior. This method examines the dispersion of returns of stocks in the portfolio in comparison to the overall market return. When investors are in line with the general market expectation, individual stock returns will not significantly differ from the overall market return.

The use of the CSAD variable is based on its consideration of a non-linear relationship between herd behavior and the market, which is more reflective of real-world dynamics than the linear relationship of the CSSD model. In addition, adding $R_{m,t}$ on the right side of the regression equation allows simulating the asymmetric behavior of investors under different market conditions.

CSAD is determined by the formula:

$$CSAD_t = \frac{1}{N} \sum_{i=1}^N |R_{i,t} - R_{m,t}| \quad (6)$$

According to Chang et al. (2000), the linear relationship between the dispersion in individual asset returns and the average return of the market portfolio will be violated if herding behavior exists. The relationship between CSAD and market returns will become nonlinear, so the existence of herding behavior will be confirmed through the regression model:

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R_{m,t}^2 + \varepsilon_t \quad (7)$$

Herding behavior is determined to exist if the coefficient γ_2 is negative and statistically significant. This shows that when there is a strong fluctuation in the squared market interest rate ($R_{m,t}^2$), the CSAD index tends to decrease, indicating that investors tend to follow the general market sentiment during these periods.

After testing the existence of herding psychology in the Vietnamese stock market, to determine the impact of this behavior on the market, the authors will use the model suggested by Mouna Jlassi and Ahmed Bensaïda (2014):

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R_{m,t}^2 + \gamma_3 |Vol_{m,t}| + \gamma_4 |Vol_{m,t}^2| + \varepsilon_t \quad (8)$$

$Vol_{m,t}$ is the total volume of the stocks traded in the study at time t . The volume and squared volume variables are added with the assumption that abnormally large volumes are indicative of irrational investor behavior, i.e., large trading volumes occur during periods when herd behavior is strongest. The model of Mouna Jlassi and Ahmed Bensaïda expects a correlation between squared volume and CSAD similar to that of the market interest rate.

Finally, we perform the Granger causality test to determine the direction of the impact between two CSAD variables and trading volume. With the CSAD index representing herd behavior and trading volume representing investor behavior, the reason for choosing this testing method is because the purpose of the Granger causality test is to determine whether the fluctuations of one series are effective in predicting the value of another series. If the fluctuations of the CSAD index, which are indicative of the presence of herd behavior, are capable of predicting the trading volume on the stock market based on the Granger test and vice versa, we can conclude that herd behavior affects the stock market through changes in trading volume combined with interest rates and prices and vice versa. In addition, because the Granger test requires the observed data series to be stationary, the authors also need to conduct the ADF unit root test before using the Granger test method.

4. EMPIRICAL RESULTS

4.1. Descriptive statistics of research data

Table 1. Descriptive statistical results

Variable	Obs	Mean	Std. Dev.	Min	Max
Total Vol	3,739	4.57e+07	3.25e+07	337120	2.14e+08
r	3,739	.0001191	.0138654	-.0667	.0498
CSAD	3,739	.0147878	.0059928	.0015571	.0486643
Totalvolsq~d	3,739	3.14e+15	4.65e+15	1.14e+11	4.57e+16
Absr	3,739	.0098588	.009749	0	.0667
Squaredr	3,739	.0001922	.0003899	0	.0044489

Source: calculated using STATA 17 software

Based on the overview analysis table below, some comments can be drawn on the overview of the Vietnamese stock market and the herd tendency of investors in the period 2008-2022.

During this period, the Vietnamese stock market had a fairly low daily interest rate of 0.01191%/day, or about 4.35%/year, with a weekly standard deviation of 1.38654%/week, the period when the market traded with the lowest interest rate occurred in 2008, coinciding with the global financial crisis that had a strong impact on investor sentiment. The CSAD index, determined based on data from stocks in the research group's portfolio, had an average of 1.47878% with a standard deviation of 1.51988%.³ Weekly trading volume also has a fairly high standard deviation indicating quite a large fluctuation in trading activity that occurs on a daily basis in the market.

³ Data calculated using STATA 17 software

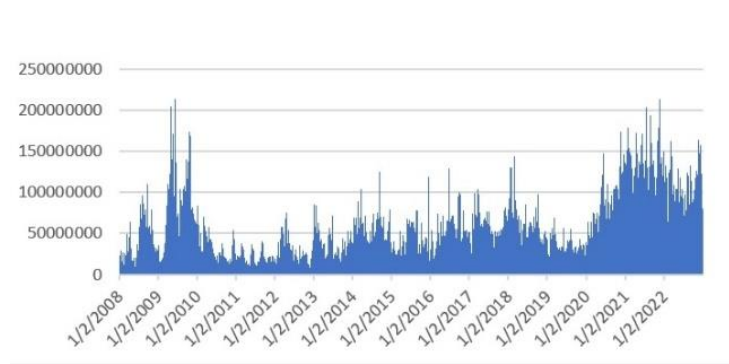


Figure 3: Fluctuations in trading volume of stocks during the study period

Source: calculated using STATA 17 software

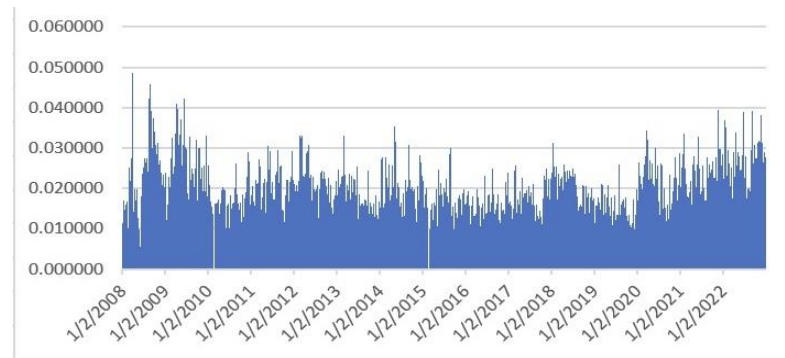


Figure 4: Fluctuations of CSAD index during the study period

Source: calculated using STATA 17 software

4.2. Results of testing the existence of herd behavior in the Vietnamese stock market

The test results for $p\text{-value} = 0$ show that the hypothesis that the independent variables in Chang et al.'s model cannot explain the change in the dependent variable can be rejected.

The results of running the regression analysis model of the absolute standard deviation of cross-sectional returns between individual stocks and the market portfolio of Chang et al. show the following regression results:

$$CSAD_t = \alpha + 0.4433062|R_{m,t}| - 8.632151R_{m,t}^2 + \varepsilon_t \quad (9)$$

Based on the regression results, the regression coefficient of absolute return is positive, the regression coefficient of square return is negative, has a high value, and both coefficients are statistically significant at the 1% level. This shows that the CSAD index tends to increase at a decreasing rate as the absolute value of the return increases. When investors exhibit herd behavior, the returns of individual stocks will converge to the average trend of the market instead of deviating significantly from the market return. Therefore, the linear relationship between CSAD and market return will not hold, this relationship will turn to non-linear with a decreasing degree, indicating that investors tend to follow the general sentiment of the whole market instead of trading according to their own signals.

This result helps us reject the hypothesis $H_0: \beta_2=0$ and accept the hypothesis $H_1: \beta_1<0$ of hypothesis 1: There is the existence of herd behavior in the Vietnamese stock market in the period 2008-2022. Specifically, when the absolute value of the total market interest rate increases by 1 unit, the absolute standard deviation of the cross-return rate between individual stocks and the market portfolio will increase by 0.4433062 units. However, the absolute value of the interest rate changes will lead to a

change in the value of the squared interest rate, when the squared interest rate increases by 1 unit, the absolute standard deviation of the cross-return rate between individual stocks and the market portfolio will decrease by 8.632151 units. Summing these two effects, in the case of a positive market and an increase of 1 point, the CSAD index will increase by 0.4433062 units due to the impact of the absolute interest rate but only decrease by about 0.08632151 units due to the impact of the square interest rate; this is consistent with the hypotheses of the models analyzing the impact of herding behavior and proves the existence of herding behavior of investors in the research period.

Table 2. Results of testing herd behavior in the Vietnamese stock market

Source	SS	df	MS			
Model	.011241764	2	.005620882	Number of obs = 3,739		
Residual	.123004026	3,736	.000032924	F (2, 3736) = 170.72		
Total	.13424579	3,738	.000035914	Prob > F = 0.0000		
				R-squared = 0.0837		
				Adj R-squared = 0.0832		
				Root MSE = .00574		
CSAD	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Absr	.4433062	.0258483	17.15	0.000	.392628	.4939844
Squaredr	-8.632151	.6463744	-13.35	0.000	-9.899432	-7.36487
_cons	-8.632151	.0001744	69.25	0.000	.0117347	.0124185

Source: calculated using STATA 17 software

4.3. Results of testing the herding behavior model with the addition of the trading volume variable

The results of testing the model of Chang et al. adding two independent variables, trading volume and squared trading volume, gave similar results on the existence of herding behavior in the Vietnamese stock market. Adding these two variables to the model also increased the adjusted R2 index, showing that the model's suitability has increased. The regression coefficients of both trading volume and squared trading volume are statistically significant at the 1% level. The fact that the regression coefficient of the squared trading volume variable is negative and statistically significant shows that an increase in trading volume in the market will increase the dispersion of profits at a decreasing rate. This shows that trading volume is also a variable that helps determine herding behavior in the market. The reason for this correlation could be that with the sudden increase in trading volume, the liquidity of stocks increases, which helps investors have more information about the market, which makes them avoid trading based on their personal judgment alone. This leads to the trading volume having the same effect on herding behavior as the market interest rate has on herding behavior.

Table 3. Results of testing the herd behavior model with the addition of the trading volume variable

Source	SS	df	MS			
Model	.03541213	4	.008853033	Number of obs = 3,739		
				F (4, 3734) = 334.47		
				Prob > F = 0.0000		

				R-squared = 0.2638 Adj R-squared = 0.2630 Root MSE = .00514		
Residual	.098833659	3,734	.000026469			
Total	.13424579	3,738	.000035914			
CSAD	Coef.	Std. Err.	t	P> t 	[95% Conf. Interval]	
Absr	.4365731	.0231783	18.84	0.000	.3911298	.4820164
Squaredr	-9.218706	.5801866	-15.89	0.000	-10.35622 _[SEP]	-8.081193
Totalvol	1.11e-10	8.08e-12	13.73	0.000	-9.51e-11	1.27e-10
Totalvolsquared	-2.42e-19	5.65e-20	-4.29	0.000	3.53e-19	-1.32e-19
_cons	.0079444 _[SEP]	.0002592	30.65	0.000	.0074363 _[SEP]	.0084525

Source: Authors' calculations

4.4. Unit Root Test

The team performed the extended Dickey-Fuller (ADF) unit root test for two data series CSAD and total trading volume. The results showed that the maximum appropriate lag length determined by Akaike Information Criterion (AIC), Schwarz Information Criterion (SBIC), Hannan-Quinn Criterion (HQIC) with the stable model is 3.

Table 4. Unit inspection results

lag	LL	LR	df	p	PPE	AIC	HQIC	SBIC
0	-21107				2.7e+10	29.7101	29.7129	29.7175
1	-19999.2	2215.7	4	0.000	5.8e+09	28.1564	28.1647	28.1787
2	-19856.4	285.44	4	0.000	4.8e+09	27.9612	27.975	27.9982
3	19767.7	177.53*	4	0.000	4.2e+09*	27.8419*	27.8613*	27.8937*

Endogenous: CSAD Totalvol

Exogenous: _cons

Source: Authors' calculations

Table 5. Unit test statistics

Data series	Test statistics
CSAD (k=3)	-6.706***
Total transaction volume (k=3)	-2.893**

Source: Authors' calculations

The ADF test results show that the hypothesis H0 of the non-stationarity of the CSAD series is rejected at the 1% level and the total trading volume series at the 5% level. The authors accept the hypothesis H1 of this test: the investor net trading volume series and the CSAD series are stationary, which means that the two data series satisfy the Granger test condition.

4.5. Granger test to determine the causal relationship between herding behavior and trading volume

After determining the necessary conditions for the Granger test and determining the appropriate lag, the group used the Granger test to test the relationship between herding behavior (represented by the CSAD index) and investor behavior (represented by trading volume). Specifically, based on the group's calculation results, the CSAD index has an impact on the net trading volume of the selected group's stocks with a lag of 3 sessions, which can help build models to predict trading volume on the stock market based on the index assessing herding behavior in the past.

The Granger test results on the impact of total trading volume on the CSAD index gave indeterminate results, however, the test on the impact of CSAD on trading volume showed that the hypothesis H0: $\delta_1 = 0$, accepting the hypothesis H1: $\delta_2 \neq 0$, the CSAD index has an impact on net trading volume at the 1% significance level. The rejection of the hypothesis H0: allows the author to conclude that the causal relationship between herding behavior and net trading volume on the stock market is a one-way relationship, herding behavior affects the change in stock trading volume. Combined with the results of the herding behavior test model with the addition of the trading volume variable, in which the CSAD index increases at a decreasing rate as the trading volume increases, this relationship is a positive relationship, with the increase in the CSAD index being a factor determining the increase in the value of the transaction. The extent of this relationship needs to be further determined through models that analyze other factors affecting trading volume.

Table 6. Granger test results

Granger causality Wal tests

	Excluded	Chi2	Df	Prob > Chi2
CSAD	Totalvol	.	0	.
CSAD	ALL	.	0	.
Totalvol	CSAD	18.379	3	0.000
Totalvol	ALL	18.379	3	0.000

Source: Authors' calculations

5. CONCLUSIONS

In markets like Vietnam, where accessing trading information can be challenging, employing the herd behavior research method based on the dispersion of stock returns compared to market returns is considered an effective approach. Through the utilization of the CSAD method, we built a model to examine herd behavior and assess its impact on the Vietnamese stock market using the closing prices over 3,739 trading days, as well as the interest rates and trading volumes of selected stocks. Findings from this study offer compelling evidence for the presence of herd behavior on the HOSE exchange of the Vietnamese stock market. At the same time, with the variables of squared trading volume, net trading volume increases herd behavior and the impact is non-linear. While the Granger causality test revealed that herd behavior affects trading volume on the HoSE, the nature of this relationship remained somewhat ambiguous. The use of the CSAD method becomes more appropriate, especially when the study encompasses an extended period, and captures significant volatility from 2008 to 2022.

Moreover, this behavior is evident in both bull and bear markets, yet it is more pronounced in bear markets, particularly following the 2008 financial crisis.

6. Policy implications

Based on the findings from the model, the author proposes the following recommendations to contribute to increasing professionalism and sustainability in investment, while minimizing strong fluctuations caused by the crowd psychology of many individual investors.

Firstly, for investors, when strong herd behavior appears in the stock market, stock prices can be pushed far away from their real value, leading to investors being able to misprice the market. Therefore, investors need to make investment decisions based on considering risks and rates of return from information published on the market. In addition, they need to clearly understand the manifestations of herd behavior such as losing independence in investment decisions, pursuing short-term trends without careful analysis. Early identification of these signs will help them avoid unfounded investment decisions, especially in the context of the volatile Vietnamese stock market. In addition, to minimize the risk of herd behavior, investors should diversify their investment portfolios and determine their own risk appetite. Investing in many different industries and asset classes combined with choosing stocks that suit their abilities and personal preferences will minimize the negative impact of market fluctuations and avoid heavy financial losses.

Second, for listed companies on the stock market, to minimize the impact of herd behavior and improve information for investors, listed companies on the stock market need to increase transparency and information quality, strictly adhere to accounting principles according to accounting standards and avoid creating large differences between financial statements before and after auditing so that investors can trust official information from the company. Furthermore, businesses also need to proactively use auditing, credit rating, and asset valuation services to assess the business and financial situation of the business, thereby proactively and promptly disclosing official information to investors. Through this, it will help to repel herd behavior, ensure investor profits, and stabilize market health.

Third, based on the group's Granger test results, with a time interval of 3 trading sessions, the increase in trading volume in the market will lead to increasingly clear profit differentiation. This means that as the market becomes more active, the difference in profits between stocks will also increase. Therefore, state management agencies need to carefully consider the application of tools such as trading margins to help the market quickly adjust to real value. This not only limits the situation of large increases and decreases in stocks, especially newly listed stocks or stocks with extraordinary business results, but also effectively prevents crowd psychology, helping investors make wiser decisions. At the same time, the Ministry of Finance needs to coordinate with the Ministry of Information and Communications to prevent false information, communicate new policies, risk prevention measures, and strictly handle fake information, helping investors to be more confident and avoid herd behavior.

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