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Detecting Investor Herding behaviours on Small Medium Capitalization Company Stocks Before and After the Implementation of Broker Code and Investor Type Closing Policy by Indonesian Stock Exchange

Budi Wibowo Halim[1]*. Maria Ulpah[1]

[1]*Faculty of Economics and Business. Universitas Indonesia. Indonesia*

ABSTRACT

This research aims to detect the investor herding behavior indications towards Small Medium Capitalization Stocks during several market conditions in particular observation periods which are before COVID-19 pandemic. after COVID-19 pandemic and after PT. Bursa Efek Indonesia / Indonesia Stock Exchange (IDX) started implementing its policy regarding the closing of the broker code and investor type in the secondary market on December 06. 2021. This research measures the dispersion of statistical data of stock returns to detect the herding indications using cross-sectional standard deviation (CSSD) and cross-sectional absolute deviation (CSAD) found by Christie and Huang (1995) and Chang et al. (2000). The research findings shows significant indications of herding behavior before the COVID-19 Pandemic and show a decrease of herding behavior indications after the public announcement of the plan to implement the broker code and investor type closing policy by IDX. These findings insinuate that fewer investors mimicked other investors' actions; thus. investors tend to be more prudent in making their investments and become more prudent and rational in making investment decisions after the policy is announced to be implemented by IDX.

Keywords: *Broker Codes. Investor Types. Market Herding behavior. Stocks. Small Medium Capitalization.*

1. INTRODUCTION

Investors may gain profits through stock trading in the stock market by gaining larger profit from any other financial instruments trade. although it is even by greater risks. Conventional efficient markets theory depicts that markets are efficient in the matter of information and rational expectations of investors reflect the future prices in the market; consequently. any new information published in the market shall instantaneously reflect expected prices (Yao. Ma. Peng He. 2014). However. the efficient market theory has been disputed owing to the flaws in the financial market based on various perceptive biases. human responses. and human errors. Investors' Herding behaviors have been tagged as an explanation for the surfeit volatility and short-term inclinations observed in financial markets. It brings about stock prices to diverge from the original fundamental values and implicates trading schemes and asset pricing models.

One of the phenomena which affects stock prices is herding behavior. Syriopoulos and Bakos (2019) defined herding behaviour as social behavioral convergence of economic agents. Herding is a collective behavior pattern that comes from certain individuals' interactions (Setiyono. Tandelilin. Hartono & Hanafi. 2013). Herding behavior manifests in a tendency to imitate the actions of others. (Yao et al.. 2014; Klein et al.. 2012; Espinosa-Méndez and Arias. 2021; Economou et al.. 2011; Poshakwale and Mandal. 2014. Yan et al. 2014; Klein et al.. 2014; Blasco et al. 2012; Bekiros et al.. 2017; Aharon. 2021; and Arne. 2013). Its intent to copy the behaviour of other is obvious (Bikhchandani and Sharma. 2000). As COVID-19 entered Indonesia in early 2020 and was publicly announced on March 01. 2020. the economy took effect. including the stock market. As the Indonesian economy faced a downtrend. there are indications of herding behavior in the Indonesian Stock Market. investigated by PT. Bursa Efek Indonesia / Indonesia Stock Exchange (IDX) which may contribute negatively to the economic recovery

* *Corresponding author: halim.liem@gmail.com*

post-COVID-19. Indonesian investors may be exposed to herding behavior by imitating the trade of certain brokers upon certain shares in IDX. The stocks entangled in herding behaviors are those of medium and small-capitalization company stocks. as good fundamental values may not support them. On February 01. 2021. IDX publicly informed its plan to impose the closing of broker code and investor-type policy in secondary market stock trading to minimize the effect of herding behavior. By December 06. 2021. the policy had been fully implemented by IDX.

This research aims to detect the investor herding behavior on Small Medium Capitalization Company Stocks before and after the implementation of broker code and investor-type closing policy. by measuring the dispersion of statistical data of stock returns for detection of herding effects using cross-sectional standard deviation (CSSD) and cross-sectional absolute deviation (CSAD) found by Christie & Huang (1995) and Chang. et al. (2000). The dataset used in this research consists of the closing price of 80 stock samples of Small Medium Capitalization. Jakarta Composite Index. and IDX Small Medium Composite Index within the time frame of March 02. 2019. until June 26. 2022.

2. LITERATURE REVIEW

Christie & Huang (1995) found that herding is more likely found in extreme market conditions; in this study. the COVID-19 pandemic. where investors tend to subdue their beliefs and go along with the market unanimity. thus creating a herd. According to a study by Indārs. Savin and Lublóy (2019). there are mainly two types of herding based on the intentions of bringing up trading in the identical direction. namely spurious and intentional. Spurious herding is a herding situation in which investors. who are professional and strengthened by similar education and professional qualifications. act identically after the same information is exposed to them. Intentional herding. on the other way. is based on the strong keenness of investors to mimic the actions of other investors in the market. They subdue their confidence and follow the market unanimously to gain profit. Bowe and Domuta (2004) found that foreign investors are likely engaged in herding more than the local investors.

Other types of herding based on the rational or irrational behaviors of economic actors are rational herding and irrational herding. Rational herding likely occurs from information asymmetry. reputation. and compensation concerns. Irrational herding rises from a psychological aspect that investors might perceive as safer and more secure when following the crowd unanimity.

The CSAD of Christie & Huang (1995) is used to measure return dispersion. The dispersion levels in the extreme tails of the market return distribution were isolated by this method. It aimed to assess whether it differs significantly from the average dispersion levels that excluded the external market returns. Their study found that dispersions rise significantly during periods of large absolute price changes at both the market and industry levels. Such an increase is later elucidated as proof of the existence of herding. The CSAD method was further modified by Chang. Cheng & Khorana (2000). Aside from using the CSAD method. they also proposed a non-linear regression specification for detecting herding behavior using the daily stock price data of 5 global markets US. South Korea. Hong Kong. Taiwan. and Japan. No herding evidence was found in the US and Hong Kong. some in Japan. and substantial proof in South Korea and Taiwan.

Hwang & Salmon (2004) developed an alternative herding measure based on the cross-sectional dispersion of factor sensitivity of assets within a given market. similar to Christie & Huang (1995). This method implies that herding behavior may occur in a relatively quiet market environment. Another study presented by Blasco and Ferreruela (2008) found that only the Spanish market showed notable herding behavior. by comparing the CSSD of each target market to an artificially created “herd-free” market.

The latter studies in Indonesia note that local investors may imitate foreign investors in trading on IDX. However. a study by Setiyono et al. (2013) found that the herding appears stronger in a stable market condition on IDX by adopting a positive feedback strategy. Another study by Setyawan & Ramli (2016) found that herding behavior occurs from negative feedback trading as domestic investors tended to mimic the foreign investors in trading strategy regardless of extreme conditions.

3. METHODOLOGY

The empirical investigation of herding indications was conducted upon small and medium capitalization company stocks listed in IDX from March 02. 2019. until June 26. 2022. The time frame was set due to the issue of broker code and investor-type closing policy. as first mentioned by IDX in early February 2021. and was implemented on 09 December 2021. However. the observations were conducted before the broker code and investor-type closing policy were implemented to observe the indications of herding of the observed stocks. After the closing policy was implemented. the observations sought to find whether the policy affected the herding indications.

Out of three hundred and ninety-one (391) Small and Medium Capitalizations Company Stocks available. eighty (80) stocks were chosen as samples. This research also uses Jakarta Composite Index (JKSE) and Indonesia Stock Exchange Small Medium Capitalization Composite Index (IDX-SMC Composite). The data set was taken from Refinitiv Eikon. which was chosen because of the up-to-date market data and effective and efficient data processing.

This research utilizes the CSSD and the CSAD method mentioned above to examine the indications of herding behavior on the observed stocks from several observations. The first observation period is from March 02. 2019. to June 26. 2022. The second observation period is from March 02. 2019. to March 01. 2020. as the first COVID-19 case was announced in Indonesia. The third observation period is from March 02. 2020. to January 31. 2021. as IDX announced the broker code and investor-type closing policy plan on February 01. 2021. The fourth observation period is from February 01. 2021. to December 05. 2021. as IDX implemented before the broker code and investor-type closing policy on December 06. 2021. The fifth and last observation period is from December 06. 2021. to June 26. 2022. as IDX implemented the investor domicile closing policy on June 27. 2022. The CSSD and the CSAD were applied to the same set of data.

The observations of CSSD are conducted by counting the intra-day return of each stock. JKSE Return. and IDX SMC Composite Return. After the return data were obtained. the CSSD return shall be counted using the following equation:

$$\text{CSSD} = \sqrt{\frac{\sum_{i=1}^{n} (Rs,t-Rm,t)^2}{N-1}}$$

with Rs using stock return. and Rm using each JKSE and IDX SMC Composite return respectively. The same counting is applied towards IDX SMC Composite Return. The result of the counted number is squarely rooted. The JKSE and IDX SMC Composite returns were then used to determine the right and left tails. Based on Christie & Huang (1995). the right tail value shall be determined by 95% while the left tail value shall be determined by 5%. The right tail percentage was obtained by interpolating the value of the JKSE and IDX SMC Composite returns during the observed period within the range of the right tail value of 95%. The left tail percentage was obtained by interpolating the value of the JKSE and IDX SMC Composite returns. respectively. during the observation period within the range of the left tail value of 5%. The right Tail and the left are compared to JKSE. and IDX SMC Composite returns. respectively. within the response of 1 as a true value or 0 as a false value. The CSSD regression formula utilized in this research is:

$$CSSD = a + b_1 UP + b_2 DOWN + \varepsilon,$$

which regressed the CSSD percentage towards the right tail and left tail comparison value of JKSE and IDX SMC Composite returns respectively. After the coefficients and the standard errors were obtained. they would be tested on T-Stat and p-value. T-stat was obtained by dividing coefficients by standard errors of Left. right. and intercepts values obtained from regression. P-value was obtained by testing two small tail data set t-distribution upon the T-stat and the respected degree of freedom in the regression result. If the dummy variable shows a negative value and it is significant. then there is a herding indication during the observation period.

The observations of CSAD are conducted by counting the CSAD percentage using the following equation:

$$CSAD = \frac{1}{n}\sum_{i=1}^{n} \quad | R_{st} - R_{mt} |$$

The CSAD percentage is then regressed using the following regression formula:

$$CSAD = a + b_1 r_m + b_2 |r_m| + b_3 r_m^2 + \varepsilon,$$

which regressed CSAD percentage towards market return. absolute market return and squared market return. If the value of the variable of square market return shows a negative value and is significant. then there is a herding indication during the observation period. After the coefficients and the standard errors were obtained. they would be tested on T-Stat and p-value. T-stat was obtained by dividing coefficients by standard errors of squared return. absolute return. return and intercept value obtained from regression. P-value was obtained by testing two small tail data set t-distribution upon the T-stat and the respected degree of freedom in the regression result.

The research consists of two hypotheses. The first hypothesis is h_0 which indicates there is investor herding indication during the observation period. The second hypothesis is h_1 which indicates no investor herding indication during the observation period. If the value of the b_2 of the CSSD regression result is negative and the significant value. then h_0 shall be rejected. Otherwise. h_0 shall not be rejected. If the value of the b_3 of the CSAD regression result is negative and the significant value. then h_0 shall be rejected. Otherwise. h_0 shall not be rejected. Rejected h_0 means there is an investor herding indication.

5. RESULT

5.1 March 02. 2019. to June 26. 2022 Period

The CSSD results of the observed stocks towards JKSE from March 02. 2019. to June 26. 2022. are as follows:

Table 1. Christie & Huang (1995) CSSD Regression of JKSE. 2019-2022

	b_2	b_1	a
Coefficient	-0.02821	0.02537	0.00031
Stad. Error	0.00128	0.00128	0.00029
	0.53356	0.00788	#N/A
	463.84836	811.00000	#N/A
	0.05757	0.05033	#N/A
T-STAT	-22.0561583	19.8373772	1.05391
P-VALUE	0.000%	0.000%	29.224%

As the coefficient of the Left tail is negative; there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and degree of freedom value must be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is below 0.001. then h_0 shall be rejected.

The CSSD results of the observed stocks towards IDX-SMC Composite Index from March 02. 2019. to June 26. 2022. are as follows:

Table 2. Christie & Huang (1995) CSSD Regression of IDX-SMC Composite Index. 2019-2022.

	b_2	b_1	a
Coefficient	-0.02969	0.02427	0.00098
Stad. Error	0.00126	0.00126	0.00029
	0.54453	0.00778	#N/A
	484.78647	811.00000	#N/A
	0.05876	0.04915	#N/A
T-STAT	-23.48796	19.20117	3.402695
P-VALUE	0.000%	0.000%	0.070%

As the coefficient of the Left tail is negative; there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and degree of freedom value must be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is below 0.001. then h_0 shall be rejected.

The CSAD results of the observed stocks towards JKSE from March 02. 2019. to June 26. 2022. are as follows:

Table 3. Chang. et al. (2000) CSAD Regression of JKSE. 2019-2022.

	b_3	b_2	b_1	a
Coefficient	0.401500648	0.39312738	0.108054	0.017239
Stad. Error	3.868083457	0.21813439	0.088956	0.001642
	0.016154089	0.02888669	#N/A	#N/A
	4.433218777	810	#N/A	#N/A
	0.011097778	0.67589716	#N/A	#N/A
T-STAT	0.103798341	1.8022256	1.214701	10.49601
P-VALUE	91.74%	7.19%	22.48%	0.00%

As the coefficient of the Square Market return is positive. there is no indication that herding behavior was present. The T-stat value appears as a positive value. As the P-value is far above 0.001. then h_0 shall not be rejected.

The CSAD results of the observed stocks towards the IDX-SMC Composite Index from March 02. 2019. to June 26. 2022. are as follows:

Table 4. Chang. et al. (2000) CSAD Regression of IDX-SMC Composite Index. 2019-2022.

	b_3	b_2	b_1	a
Coefficient	11.2305	0.122684	0.099545	0.018805
Stad. Error	7.389845	0.28936	0.089267	0.001859
	0.023484	0.028855	#N/A	#N/A
	6.49328	810	#N/A	#N/A
	0.01622	0.674433	#N/A	#N/A
T-STAT	1.51972	0.423983	1.115129	10.11818
P-VALUE	12.90%	67.17%	26.51%	0.00%

As the coefficient of the Square Market return is positive. there is no indication that herding behavior was present. The T-stat value appears as a positive value. As the P-value is far above 0.001. then h_0 shall not be rejected.

The CSSD results indicate investor herding behavior from March 02. 2019. to June 26. 2022. The CSAD result. on the other hand. shows no indication of investor herding behavior during the same period of observations.

5.2 March 02. 2019. to March 01. 2020 Period

The CSSD results of the observed stocks towards JKSE from March 02. 2019. to March 01. 2020. are as follows:

Table 5. Christie & Huang (1995) CSSD Regression of JKSE. 2019-2020.

	b_2	b_1	a
Coefficient	-0.01736	0.01492	-0.00054
Stad. Error	0.00163	0.00163	0.00036
	0.45246	0.00549	#N/A
	104.11969	252.00000	#N/A
	0.00628	0.00760	#N/A
T-STAT	-10.67433347	9.17173924	-1.49268
P-VALUE	0.000%	0.000%	13.677%

The CSSD results of the observed stocks towards IDX-SMC Composite Index from March 02. 2019. to March 01. 2020. is as follows:

Table 6. Christie & Huang (1995) CSSD Regression of IDX-SMC Composite Index. 2019-2020.

	b_2	b_1	a
Coefficient	-0.03361	0.02778	0.00040
Stad. Error	0.00255	0.00255	0.00057
	0.54957	0.00861	#N/A
	153.73054	252.00000	#N/A
	0.02280	0.01869	#N/A
T-STAT	-13.18458	10.89456	0.706191
P-VALUE	0.000%	0.000%	48.072%

As the coefficient of the Left tail is negative; there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and degree of freedom value must be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is below 0.001. then h_0 shall be rejected.

The CSAD results of the observed stocks towards JKSE from March 02. 2019. to March 01. 2020. are as follows:

Table 7. Chang. et al. (2000) CSAD Regression of JKSE. 2019-2020.

	b_3	b_2	b_1	a
Coefficient	-21.23075709	0.85492509	0.023735	0.013121
Stad. Error	7.633978384	0.1426526	0.038235	0.000526
	0.247011862	0.00424457	#N/A	#N/A
	27.44619479	251	#N/A	#N/A
	0.001483444	0.00452211	#N/A	#N/A
T-STAT	-2.781086875	5.99305657	0.620758	24.96473
P-VALUE	0.58%	0.00%	53.53%	0.00%

As the coefficient of the Square Market return is negative. there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and the degree of freedom value must be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is far above 0.001. h_0 shall not be rejected.

The CSAD results of the observed stocks towards IDX-SMC Composite Index from March 02. 2019. to March 01. 2020. are as follows:

Table 8. Chang. et al. (2000) CSAD Regression of IDX-SMC Composite Index. 2019-2020.

	b_3	b_2	b_1	a
Coefficient	9.799306	0.255171	0.034671	0.016356
Stad. Error	1.764193	0.074141	0.021906	0.000505
	0.644983	0.00438	#N/A	#N/A
	152.0029	251	#N/A	#N/A
	0.008748	0.004815	#N/A	#N/A
T-STAT	5.554553	3.441706	1.58273	32.40678
P-VALUE	0.00%	0.07%	11.47%	0.00%

As the coefficient of the Square Market return is positive. there is no indication that herding behavior was present. The T-stat value appears as a positive value. As the P-value is below 0.001. then h_0 shall be rejected.

Based on the CSSD result and CSAD result using JKSE return. investor herding behavior is indicated from March 02. 2019. to March 01. 2020. before the first COVID-19 case was announced in Indonesia on March 02. 2020.

5.3 March 02. 2020. to January 31. 2021 Period

The CSSD results of the observed stocks towards JKSE from March 02. 2020. to January 31. 2021. are as follows:

Table 9. Christie & Huang (1995) CSSD Regression of JKSE. 2020-2021.

	b_2	b_1	a
Coefficient	-0.04475	0.03869	0.00087
Stad. Error	0.00369	0.00369	0.00085
	0.55642	0.01192	#N/A
	135.47116	216.00000	#N/A
	0.03847	0.03067	#N/A
T-STAT	-12.12123102	10.4797296	1.024844
P-VALUE	0.000%	0.000%	30.658%

The CSSD results of the observed stocks towards IDX-SMC Composite Index from March 02. 2020. to January 31. 2021. are as follows:

Table 10. Christie & Huang (1995) CSSD Regression of IDX-SMC Composite Index. 2020-2021.

	b_2	b_1	a
Coefficient	-0.03642	0.02743	0.00152
Stad. Error	0.00303	0.00303	0.00070
	0.52522	0.00977	#N/A
	119.47274	216.00000	#N/A
	0.02283	0.02063	#N/A
T-STAT	-12.0284	9.059208	2.177718
P-VALUE	0.000%	0.000%	3.051%

As the coefficient of the Left tail is negative; there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and the degree of freedom value must be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom

value. As the P-value is below 0.001. then h_0 shall be rejected.

The CSAD results of the observed stocks towards JKSE from March 02. 2020. to January 31. 2021. are as follows:

Table 11. Chang. et al (2000) CSAD Regression of JKSE. 2020-2021.

	b_3	b_2	b_1	a
Coefficient	0.152547686	0.42256157	0.080755	0.017448
Stad. Error	0.987838673	0.06632524	0.023445	0.000688
	0.483171399	0.00602474	#N/A	#N/A
	66.99954969	215	#N/A	#N/A
	0.007295756	0.00780397	#N/A	#N/A
T-STAT	0.154425708	6.37105185	3.444383	25.37716
P-VALUE	87.74%	0.00%	0.07%	0.00%

The CSAD results of the observed stocks towards IDX-SMC Composite Index from March 02. 2020. to January 31. 2021. are as follows:

Table 12. Chang. et al. (2000) CSAD Regression of IDX-SMC Composite Index. 2020-2021.

	b_3	b_2	b_1	a
Coefficient	5.885617	0.399669	0.114975	0.017203
Stad. Error	2.362566	0.099051	0.027978	0.000722
	0.544254	0.005682	#N/A	#N/A
	85.58452	215	#N/A	#N/A
	0.008289	0.006941	#N/A	#N/A
T-STAT	2.491197	4.035002	4.109423	23.8217
P-VALUE	1.35%	0.01%	0.01%	0.00%

As the coefficient of the Square Market return is positive. there is no indication that herding behavior was present. The T-stat value appears as a positive value. As the P-value is above 0.001. then h_0 shall not be rejected.

Based on the CSSD results. there is an indication of investor herding behavior from March 02. 2020. to January 31. 2021. during the COVID-19 pandemic and before IDX announced the broker code and investor-type closing policy plan on February 01. 2021. However. the CSAD results show no indication of investor herding behavior during the same observation period.

5.4 February 01. 2021. to December 05. 2021 Period

The CSSD results of the observed stocks towards JKSE from February 01. 2021. to December 05. 2021. are as follows:

Table 13. Christie & Huang (1995) CSSD Regression of JKSE. February-December 2021.

	b_2	b_1	a
Coefficient	-0.01689	0.01736	0.00037
Stad. Error	0.00194	0.00194	0.00044
	0.44675	0.00597	#N/A
	82.36409	204.00000	#N/A
	0.00587	0.00727	#N/A
T-STAT	-8.719955111	8.96278794	0.848204
P-VALUE	0.000%	0.000%	39.732%

The CSSD results of the observed stocks towards IDX-SMC Composite Index from February 01. 2021. to December 05. 2021. are as follows:

Table 14. Christie & Huang (1995) CSSD Regression of IDX-SMC Composite Index. February- December 2021.

	b_2	b_1	a
Coefficient	-0.01753	0.01538	0.00113
Stad. Error	0.00188	0.00188	0.00042
	0.44188	0.00580	#N/A
	80.75681	204.00000	#N/A
	0.00544	0.00687	#N/A
T-STAT	-9.307626	8.169799	2.670676
P-VALUE	0.000%	0.000%	0.818%

As the coefficient of the Left tail is negative; there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the comparison between the t-stat value and the degree of freedom value needs to be conducted. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is below 0.001. then h_0 shall be rejected.

The CSAD results of the observed stocks towards JKSE from February 01. 2021. to December 05. 2021. are as follows:

Table 15. Chang. et al. (2000) CSAD Regression of JKSE. February- December 2021.

	b_3	b_2	b_1	a
Coefficient	-7.393066233	0.33511684	0.053589	0.017563
Stad. Error	8.408836643	0.15790417	0.031651	0.000581
	0.089290403	0.00361678	#N/A	#N/A
	6.634369496	203	#N/A	#N/A
	0.000260355	0.00265547	#N/A	#N/A
T-STAT	-0.879202028	2.12227986	1.693111	30.24022
P-VALUE	38.0331%	3.50%	9.20%	0.00%

The CSAD results of the observed stocks towards IDX-SMC Composite Index from February 01. 2021. to December 05. 2021. are as follows:

Table 16. Chang. et al. (2000) CSAD Regression of IDX-SMC Composite Index. February- December 2021.

	b_3	b_2	b_1	a
Coefficient	-6.496413	0.380114	0.06845	0.017216
Stad. Error	8.414493	0.157143	0.033173	0.000568
	0.140703	0.003641	#N/A	#N/A
	11.07989	203	#N/A	#N/A
	0.000441	0.002692	#N/A	#N/A
T-STAT	-0.77205	2.418913	2.063419	30.31217
P-VALUE	44.10%	1.64%	4.03%	0.00%

As the coefficient of the Square Market return is negative. there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and degree of freedom value need to be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is far above 0.001. h_0 shall not be rejected.

Based on the CSSD and CSAD results. there are indications of investor herding behaviors from February 01. 2021. to December 05. 2021. during the COVID-19 pandemic and before IDX implemented the broker code and investor-type closing policy on December 06. 2021.

5.5 December 06. 2021. to June 26. 2022 Period

The CSSD results of the observed stocks towards JKSE from December 06. 2021. to June 26. 2022. are as follows:

Table 17. Christie & Huang (1995) CSSD Regression of JKSE. December 2021- June 2022.

	b_2	b_1	a
Coefficient	-0.02314	0.01583	0.00094
Stad. Error	0.00269	0.00269	0.00059
	0.47026	0.00643	#N/A
	56.81358	128.00000	#N/A
	0.00470	0.00530	#N/A
T-STAT	-8.597610833	5.88149951	1.59526
P-VALUE	0.000%	0.000%	11.312%

The CSSD results of the observed stocks towards IDX-SMC Composite Index from December 06. 2021. to June 26. 2022. are as follows:

Table 18. Christie & Huang (1995) CSSD Regression of IDX-SMC Composite Index. December 2021- June 2022.

	b_2	b_1	*a*
Coefficient	-0.02170	0.01276	0.00097
Stad. Error	0.00265	0.00265	0.00058
	0.42326	0.00634	#N/A
	46.96841	128.00000	#N/A
	0.00378	0.00515	#N/A
T-STAT	-8.175695	4.806838	1.665233
P-VALUE	0.000%	0.000%	9.831%

As the coefficient of the Left tail is negative; there is an indication that herding behavior was present. The T-stat value appears as a negative value. Thus. the t-stat value and the degree of freedom value must be compared. The difference is significant. as the t-stat value is smaller than the degree of freedom value. As the P-value is below 0.001. then h_0 shall be rejected.

The CSAD results of the observed stocks towards JKSE from December 06. 2021. to June 26. 2022. are as follows:

Table 19. Chang. et al. (2000) CSAD Regression of JKSE. December 2021- June 2022.

	b_3	b_2	b_1	a
Coefficient	10.33417433	-0.1462079	0.392325	0.024934
Stad. Error	74.00097725	2.32938409	0.828326	0.01209
	0.00180435	0.07174291	#N/A	#N/A
	0.07652222	127	#N/A	#N/A
	0.00118159	0.65367479	#N/A	#N/A
T-STAT	0.13964916	-0.0627667	0.473636	2.062393
P-VALUE	88.92%	95.01%	63.66%	4.12%

The CSAD results of the observed stocks towards IDX-SMC Composite Index from December 06. 2021. to June 26. 2022. are as follows:

Table 20. Chang. et al. (2000) CSAD Regression of IDX-SMC Composite Index. December 2021- June 2022.

	b_3	b_2	b_1	a
Coefficient	13.34161	-0.514106	0.286891	0.027047
Stad. Error	154.9654	3.204324	0.883536	0.013432
	0.001555	0.071767	#N/A	#N/A
	0.065915	127	#N/A	#N/A
	0.001018	0.654121	#N/A	#N/A
T-STAT	0.086094	-0.160441	0.324707	2.01366
P-VALUE	93.15%	87.28%	74.59%	4.62%

As the coefficient of the Square Market return is positive. there is no indication that herding behavior was present. The T-stat value appears as a positive value. As the P-value is above 0.001. then h_0 shall not be rejected.

Based on the CSSD result. there is an indication of investor herding behavior from December 06. 2021. to June 26. 2022. during the COVID-19 pandemic. after IDX implemented the broker code and investor-type closing policy on December 06. 2021. and before IDX implemented investor domicile closing policy on June 27. 2022. However. the CSAD result shows no indication of investor herding behavior during the same observation period.

The research findings show different results from the CSSD and CSAD methods used to detect herding behavior during the observation period upon Small-Medium Capitalization company stocks traded in IDX. The CSAD results show non-significant negative values of b_3 in CSAD regression from March 02. 2019. to March 01. 2020. towards JKSE return which occurred before the announcement of the first COVID-19 in Indonesia but show positive values towards IDX SMC Composite return data. The CSAD results also show non-significant negative values of b_3 in CSAD regression from February 01. 2021. to December 05. 2021. towards JKSE return. JKSE. and IDX SMC Composite Return. These results may confirm the claims by Yousaf et al. (2018) that CSSD is more practical for detecting herding during extreme market conditions. while CSAD is more practical for detecting herding behavior during less extreme market conditions. Since the CSAD results from March 02. 2019. to March 01. 2020. and from February 01. 2021. to December 05. 2021. show negative but non-significant results. it may give some hints towards herding existing in this particular observation period.

The CSSD results show that herding behavior was present during the whole observation period. whether using the JKSE or IDX SMC Composite return data. Interestingly. the dispersion of stock return interpreted from the negative value of b_2 in CSSD regression increased significantly from March 02. 2020. to January 31. 2021. which signifies the start of the COVID-19 pandemic and before the announcement of the plan to implement the broker code and investor-type closing policy by IDX.

However. the observation period after the said period shows a significant decrease in stock returns dispersions. This decrease might be interpreted as fewer investors mimicking other investors' actions; thus. investors tend to become more prudent in deciding on their investments.

6. CONCLUSION

The research findings show that before and after the COVID-19 pandemic. also before and after the implementation of the broker code and investor-type closing policy by IDX. there are indications of herding behavior towards small-medium company stocks traded in IDX. The said herding behavior interpreted from the dispersions of stock returns has decreased after the public announcement of the plan to implement the broker code and investor-type closing policy by IDX. These findings insinuate that fewer investors mimicked other investors' actions; thus. investors tend to be more prudent in deciding on their investments. while investors become more prudent and rational in making investment decisions after the policy is announced to be implemented by IDX.

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