

## FULL PAPER TEMPLATE The 13th ICBMR

### Covid-19 Pandemic Effect on Herding Behavior in Indonesian Market

Stefanus Basuki<sup>1</sup>, Dr. Antonius Siahaan<sup>2\*</sup>

<sup>1,2</sup> Swiss German University, Prominence Tower Alam Sutera, 15413, Banten, Indonesia

#### ABSTRACT

The purpose of this paper is to examine the herding behavior in the Indonesian stock market during the Covid-19 pandemic and pre Covid-19 pandemic. Using the samples from all the listed stocks in LQ45 and Kompas100 index, from the period of 01 January 2017 to 31 December 2019 to represent pre Covid-19 period and 01 February 2020 to 30 September 2021 to represent the Covid-19 period. We find that overall, herding behavior is only exist in Indonesian stock market during the Covid-19 period. Furthermore, we explore herding behavior asymmetric properties during up and down market condition. We find that herding behavior is more pronounced for downside market movement. We also conduct investigation to herding correlation to net foreign buy or sell transaction in Indonesian stock market. We find that herding is more pronounce during the times of net foreign sell throughout the Covid-19 pandemic. These results are important for investors to enhance their understanding of stock markets and the financial effects of the Covid-19 pandemic.

**Type of Paper:** Empirical

**Keywords:** Herding Behavior, Indonesian Stock Market, Behavioral Finance, Equity Return Dispersion, Covid-19

---

#### 1. Introduction

In 2020, the pandemic hit the world, many countries suffered great loss from an economic point of view. During the year 2020, the global Gross Domestic Product was having a negative growth rate of minus 3.593% (World Bank, 2021). This pandemic hit all country and there was no exception for Indonesia, last year, many people lose their job and lots of businesses were being closed. However, the number of people that are investing in the stock market, Forex Online Trading, Cryptocurrencies, and other financial instruments are increasing. Based on Kustodian Sentral Efek Indonesia (KSEI) published statistics on September 2021, the number of Single Investor Identification (SID) on the Indonesian stock market grow by 65.73% year-to-date. On September 2021 there are 6,431,444 stock market investors listed in KSEI (KSEI, 2021).

In this paper, we're going to discuss investor behavior in Indonesia, especially during these past years. Our study is intended to prove whether herding exists during the pandemic, as we discover that in the previous study conducted by Fransiska et al. (2018) found that herding does not exist in

---

<sup>1\*</sup> Corresponding author. E-mail: stefanus.basuki@gmail.com

Indonesian market during the pre-pandemic era. We are conducting two separate measurements with two sets of data on different time span (pre pandemic era and pandemic era) to prove herding existence, or its absence, within those two periods.

## **2. Literature Review and Hypothesis Development**

### *2.1 Empirical Evidence*

Herding behavior is a condition where investors are acting as a group, a conforming unity, and they disregard their own knowledge and information, so that they are behaving as a follower to the general market trend, without fully understanding the situation and condition of stocks that they're invest to. Herding behavior is often shown by a conformity of stocks return within an index, to the overall market return (Tan et al.,2008).

Herding behavior can also be defined as an investor behavior who contradicts his knowledge and information to fall prey to a communal belief, regardless if the actions of this group are not based on rational reasons (Keynes, 1936). Another study defined herding behavior as investors' tendency to imitate the actions, in regards to decision-making, of other market participants, and thus ignoring their own information and what they know before (Chesnay and Jondeau, 2000).

### *2.2 Hypothesis Development*

A study found a positive correlation between trading volume and extreme volatility (Bikhchandani et al., 1992). An excessive trading volume amplified herding behavior and causing a significant increase in stock prices and overvaluation. This study shows that people act as groups and have a tendency to trade massively on some specific stocks, which lead to abnormal trading volume and generates the increase of their corresponding volatilities.

The idea is, during the period of high trading volume, it is very common that it's being followed by high volatility, and during that period, investors, whom are afraid to have substantial losses, may ignore their belief and trading behavior to imitate a more informed institutional investor (Lakonishok et al., 1992).

The Covid-19 pandemic is as predicted to be descended into economic downturn. Investors in the Indonesian stock market have growing risk of uncertainty regarding the economic condition, which resulting in substantial increase of volatility and trading volume (Dewi, 2020), that creates investors tendency to mimic decisions from other market participant (Kurz and Kurz-Kim, 2013).

## **3. Research Methodology**

### *3.1 Data Collection*

The data used in this study are required from secondary data, which are collected from the historical stock price from stocks in the LQ45 to represent blue-chip of top 45 stocks in Jakarta Composite Index and IDX Kompas100, which gives wider representation of Indonesian stock market. The data that are being used in this research is daily price. To represent the Covid-19 period, we select the time span of February 1st, 2020 to September 30th, 2021. We choose February as a start of our sampling period, because the World Health Organization (WHO) first announced the Covid-19 as Public Health Emergency of International Concern on January 30th

2020 (WHO, 2020). As for the pre-pandemic period, we choose the time span of January 1st 2017 to December 31st 2019 to represent normal condition before the pandemic.

### 3.2 Methodology

The analysis of herding behavior in this research is conducted using the *Cross-Sectional Absolute Deviation* (Chang et. al., 2000) model. After gathering the return dispersion models, we apply those data into regression model to investigate the herding indicators.

The authors have noted that that the *CSAD* model is an improved and perfected version of the previous *CSSD* (*Cross-Sectional Standard Deviation*) model by Christie and Huang (1995). However, after we conducted herding test measurement with *CSSD* model, the results have failed to get any substantial evidence of herding in any condition (even during the pandemic). This results are complementing other previous journals that criticize the accuracy and effectiveness of *CSSD* model (Chang et al. (2000), Gleason et al. (2004), and Tan et al. (2008)).

#### ***Cross-Sectional Absolute Deviation (CSAD)***

*Cross-Sectional Absolute Deviation* first introduced by Chang, Cheng, and Khorama (2000). *CSAD* gives an effective measure of herd behavior through return dispersion, which derived from the conventional *CAPM*, which is defined as the Eq. (1).

$$CSAD_t = \frac{1}{N_t} \sum_{i=1}^{N_t} |R_{i,t} - R_{m,t}|$$

$R_{i,t}$  value represents the observed stocks' return of company  $i$  at time  $t$ . While  $R_{m,t}$  is the overall market return at time  $t$  in the aggregate market stock.

If herding exists, the relationship between  $CSAD_t$  and  $R_{m,t}$  should be nonlinear. However, if the rational asset pricing is in accordance with the *CAPM*, then the relationship between  $CSAD_t$  and  $R_{m,t}$  would be linear.

The  $R_{m,t}^2$  is used to capture the nonlinearity between *CSAD* and the average market return, as shown in Eq. (2) (Dhall & Singh, 2020).

$$CSAD_t = \alpha + \gamma_1 R_{m,t} + \gamma_2 |R_{m,t}| + \gamma_3 R_{m,t}^2 + \varepsilon_t$$

This equation can be an indicator of herding existence, which is captured by the value of coefficient  $\gamma_3$ . If herding exists, its presence will be shown by a significantly negative value of  $\gamma_3$ .

#### **Asymmetric Properties in Herding Behavior during *Up* dan *Down* Market**

The direction of the market also very possible to affect the herding behavior. We conduct a robustness test on this matter to see if there is any asymmetry property in herding behavior during positive or negative market movement. We separate the regression equation based on the trajectory of the market return whether it's positive ( $R_{m,t} > 0$ ) or negative ( $R_{m,t} < 0$ ) as shown in the Eq. (3) and Eq. (4) (Munkh-Ulzii et al., 2020) (Yao et al., 2013).

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

When  $R_{m,t} > 0$ , and:

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

When  $R_{m,t} < 0$ .

As in the CSAD model, the significant negative value of  $\gamma_2$  in both Eq. (3) and Eq. (4) will prove the existence of herding behavior in the market.

### Asymmetric Property of Herding Behavior in Regards to Net Foreign Flow

In Indonesia stock market, there's a quite sizeable amount of foreign investor, which by the data from *IDX* quarterly statistics on the second quarter of 2021, the foreign investors are making the 28% of the total trading value in the Jakarta Composite Index (*IDX, 2021*). In that case, there's a good possibility that the more informed foreign investor may contribute to herding in Indonesian market.

We took the model from Yao et al. (2013), whose study about the correlation between return dispersion in the *Up* and *Down* market condition, as shown in Eq. (3) and Eq. (4). Then, we modified the variable  $R_{m,t}^{UP}$  and  $R_{m,t}^{DOWN}$  which is representation of market return condition on the time  $t$ , and replace it with  $R_{m,t}^{Buy}$  and  $R_{m,t}^{Sell}$  which are the representation of net foreign flow (buy/sell) on the Indonesian stock market, and we got the Eq. (5) and Eq. (6) as follows.

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

When foreign investor net buy in the Indonesian stock market at the time  $t$ .

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

When foreign investor net sell in the Indonesian stock market at the time  $t$ .

## 4. Results

### 4.1 Herding Behavior Test on Covid-19 Period (Feb 2020 – Sept 2021)

To prove the existence of herding behavior during the Covid-19 period, we use the daily data of *Kompas100* index and the *LQ45* index within the period of 01 February 2020 to 30 September 2021. The *CSAD* is able to capture evidence of herding on its regression results, shown in Table 1, the negative value of coefficient  $R_{m,t}^2$  with statistically significant result.

**Table 1.** Coefficient of *CSAD* regression model during the Covid-19 period

\*Notes: The number in the parentheses are *t-stats* value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$R_m$	$ R_m $	$R_m^2$	Constant	$\bar{R}^2$
Kompas100	100	0.0925 (4.8956)***	0.3580 (5.7997)***	-2.7142 (-2.0918)**	0.0166 (33.1894)***	0.2262
LQ45	45	0.1102 (6.9206)***	0.3175 (8.3420)***	-1.2447 (-2.9126)***	0.0147 (31.5386)***	0.3109

The results from Table 1 indicates that herding does exist in *Kompas100* and *LQ45* index during the period of Covid-19 according to the *CSAD* regression model, shown by the negative value of coefficient  $R_{m,t}^2$  by -2.7142 and -1.2447 respectively.

#### 4.2 Herding Behavior Test on Pre Covid-19 Period (Jan 2017 – Dec 2019)

To prove whether herding not exist in normal condition, we use the time span from pre Covid-19 condition of the year 2017 to 2019, considering in that period, the normal condition is applied in Indonesian stock market.

**Table 2.** Coefficient of *CSAD* regression model during the pre Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$R_m$	$ R_m $	$R_m^2$	Constant	$\bar{R}^2$
Kompas100	100	0.0241 (0.6705)	0.2031 (1.5179)	10.2442 (2.0803)**	0.0152 (23.0534)***	0.0999
LQ45	45	0.0580388 (2.1674)**	0.40005724 (3.9470)***	6.4491 (1.8247)**	0.0149 (31.5386)***	0.226

The positive values of all the coefficients show positive relationship between *CSAD* return dispersion model with the average market return. Which indicate that the market is behaving rationally.

#### 4.3 Robustness Test on UP and DOWN Market Condition

We also conduct robustness test to measure the asymmetric property of herding behavior in *Up* and *Down* market condition. We separate the data from the previous measurement based on the value of  $R_{m,t}$ . The value of  $R_{m,t} > 0$  means the market is on up condition, and the value of  $R_{m,t} < 0$  means the market is on down condition.

##### 4.3.1 Covid-19 Period

As what we've expected, during the Covid-19 period, herding behavior presence in both *Up* and *Down* market condition, with the exception of *Kompas100* index on *Up* market condition that has statically insignificant result ( $p\text{-value} > 10\%$ ). As shown in Table 3 and Table 4, the negative value of coefficient  $(R_{m,t}^{UP})^2$  and  $(R_{m,t}^{DOWN})^2$  prove the existence of herding.

**Table 3.** Coefficient of robustness test on *UP* market condition with *CSAD* regression model in *Kompas100* and *LQ45* index during the Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{UP} $	$(R_{m,t}^{UP})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.4099 (7.4549)***	-0.3655 (-0.6868)	0.0167 (24.9699)***	0.4531
LQ45	45	0.4222 (7.4240)***	-1.1845 (-2.2771)**	0.0148 (19.9211)***	0.3571

**Table 4.** Coefficient of robustness test on *DOWN* market condition with *CSAD* regression model in *Kompas100* and *LQ45* index during the Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{DOWN} $	$(R_{m,t}^{DOWN})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.3035 (3.9144)***	-3.2949 (-2.3626)**	0.0162 (24.7741)***	0.1151
LQ45	45	0.2613 (3.3712)***	-2.4204 (-1.7748)*	0.0145 (21.0091)***	0.1124

#### 4.3.2 Pre Covid-19 Period

The absence of herding during the pre Covid-19 period in *Kompas100* and *LQ45* is also consistent with the previous measurement. Although we found negative value of coefficient  $(R_{m,t}^{Down})^2$  in the measurement of *LQ45* index, but the statistical significance value is above 10%, hence it can't prove existence of herding. As shown in Table 5 and Table 6, herding is absence during the pre Covid-19 period.

**Table 5.** Coefficient of robustness test on *UP* market condition with *CSAD* regression model in *Kompas100* and *LQ45* index during the pre Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{UP} $	$(R_{m,t}^{UP})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.3681 (1.8440)*	2.5526 (0.3095)	0.0150 (16.5514)***	0.0814
LQ45	45	0.0972 (0.8439)	21.2314 (4.8398)***	0.0162 (28.4825)***	0.377

**Table 6.** Coefficient of robustness test on *DOWN* market condition with *CSAD* regression model in *Kompas100* and *LQ45* index during the pre Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{DOWN} $	$(R_{m,t}^{DOWN})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.1285 (0.6730)	13.1426 (2.0499)**	0.0151 (15.2365)***	0.1182
LQ45	45	0.5888 (3.5164)***	-2.1820 (-0.4032)	0.0139 (15.1563)***	0.1552

#### 4.4 Robustness Test on Net Foreign Flow (Buy/Sell Condition)

We conduct a robustness test on the asymmetric property of foreign net buy and foreign net sell condition in Jakarta Composite Index may contribute to herding behavior. Using the herding test Eq. (5) and Eq. (6) for each net foreign buy and net foreign sell condition for each day of stock

market total transactions. The samples are being grouped as two, which are the Pre-Covid condition and during the pandemic condition, similar to previous herding measurement.

#### 4.4.1 Covid-19 Period

During the Covid-19 period, in both net foreign buy and sell conditions, herding are presence. Based on the result, it points out that the foreign investor net sell condition is impacting the herding behavior in the stock market, stronger than the net foreign buy condition in both *LQ45* and *Kompas100* indexes.

**Table 7.** Coefficient of robustness test on Net Foreign Buy condition with *CSAD* regression model in *Kompas100* and *LQ45* index during the Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{Buy} $	$(R_{m,t}^{Buy})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.3743 (4.8944)***	-2.2035 (1.7477)*	0.0163 (24.7410)***	0.2779
LQ45	45	0.3906 (5.5128)***	-2.4177 (-2.1913)**	0.0140 (21.3639)***	0.3097

**Table 8.** Coefficient of robustness test on Net Foreign Sell condition with *CSAD* regression model in *Kompas100* and *LQ45* index during the Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{Sell} $	$(R_{m,t}^{Sell})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.4042 (4.4939)***	-3.5963 (-2.0217)**	0.0164 (21.1412)***	0.1793
LQ45	45	0.4158 (4.3776)***	-4.1452 (-2.2616)**	0.0145 (17.0806)***	0.1543

As shown in Table 7 and Table 8, the asymmetric property of herding behavior is obvious that it is stronger during the net foreign investor sell during the Covid-19 period.

#### 4.4.2 Pre Covid-19 Period

Consistent with our previous herding measurement, we find no evidence of herding behavior in both net foreign investors buy and sell condition in both *LQ45* and *Kompas100* index during the pre-Covid 19 period.

As shown in Table 9 and Table 10, both conditions of net foreign investor flow (buy/sell) are not creating herding behavior, confirm by the positive correlations of return dispersion (*CSAD*) and the squared market return.

**Table 9.** Coefficient of robustness test on Net Foreign Buy condition with CSAD regression model in *Kompas100* and *LQ45* index during the pre Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{Buy} $	$(R_{m,t}^{Buy})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.1353 (1.3031)	4.3458 (0.9728)	0.0159 (34.0233)***	0.1174
LQ45	45	0.1418 (3.7760)***	16.2414 (0.4006)	0.0158 (18.7508)***	0.2016

**Table 10.** Coefficient of robustness test on Net Foreign Sell condition with CSAD regression model in *Kompas100* and *LQ45* index during the pre Covid-19 period

\*Notes: The number in the parentheses are t-stats value of each coefficient. The symbol (\*\*\*), (\*\*), and (\*) represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Market	Companies Count	$ R_{m,t}^{Sell} $	$(R_{m,t}^{Sell})^2$	Constant	$\bar{R}^2$
Kompas100	100	0.3507 (1.7987)*	7.5015 (1.1103)	0.0146 (14.7191)***	0.1053
LQ45	45	0.5372 (1.1212)	1.8751 (3.1556)***	0.0145 (23.3005)***	0.3253

These results amplify the theory that the Covid-19 pandemic have strong contribution to the herding behavior in Indonesian stock market.

## 5. Conclusion

It is undeniable that the ongoing Covid-19 pandemic has affected this country in so many dimensions. Based on our CSAD model, we found evidence that herding behavior exist during the Covid-19 period, in both *LQ45* and *Kompas100* indexes, while we did not find any sign of herding in the pre Covid-19 period. Which proves that Covid-19 has affected the investor behavior in Indonesian market that resulting to a herd behavior.

The Covid-19 pandemic has triggered the Indonesian stock market to become more volatile and somehow increasing its volume transaction quite significantly. The pandemic also creates an uncertainty in the market, as the pandemic like Covid-19 is an uncharted territory to the capital market. Our research is able to prove that all of those factors caused by the pandemic has led the investors in Indonesian stock market to herd and imitate other market participant when they make an investment decision.

We also conducted robustness test on Up and Down market condition, and we find that during the Covid-19 pandemic, there are clear signs of herding behavior in both Up and Down market conditions for *LQ45* index. In *Kompas100* index, we only found evidence of herding during the Down market during the pandemic. Moreover, we found that herding behavior is stronger during the Down market condition (for *LQ45* index), which is consistent with the previous studies on herding that suggest herding is more likely to occur during the period of market stress (Chang et



al. (2000), Lao and Singh (2011), and Yao et al. (2013)). We also found that during the pre Covid-19 period, there is no evidence that herding is present in Indonesian stock market. This result further strengthens the idea that herding does not exist in pre pandemic condition.

In addition, we also conducted a robustness test on how the foreign investor flow of net buy or net sell may attribute to herding behavior in Indonesian stock market. We found that there is an asymmetric condition where herding is clearly intensified during the period of net foreign sell during the Covid-19 pandemic. We find stronger evidence of herding behavior in both *LQ45* and *Kompas100* during the net foreign sell rather than the net foreign buy condition within the same period. Furthermore, we did not find any evidence of herding during the pre Covid-19 period in both the net foreign buy and sell condition. These findings show that local retail investors have a tendency to go by with the foreign investor in the period of uncertainty or market turmoil, as they see the foreign investor as the more informed ones.

Therewith, this research is able to prove both hypothesis that herding behavior is not exist in Indonesian stock market during the pre Covid-19 pandemic, as it only exists in the Covid-19 pandemic. Therefore, we conclude that the Covid-19 is clearly has significant effect on herding behavior in Indonesian stock market.

## **6. Recommendations**

With the limited time of research, we still can't determine the effects of herding behavior itself to the Indonesian investors, especially the follower (new investors with limited knowledge). We hope that future research may able to go through what are the positive and negative impacts of herding behavior in Indonesian stock market, looking from the investors' point of view.

Herding behavior is a phenomenon in the midst of global pandemic, or, it may be a new beginning of an era. Further research may dig deep in the social aspects of this phenomenon. As we also see that this could be a new disruptive era of the stock market that shift investors' perspective on how they value a stock, or other financial instrument.

There are also other opportunities to perfecting the model of this research, or to have future tests on how this pandemic really affecting the investors' behavior in the long run. As the authors only have limited time span while currently, the pandemic is still ongoing by the time of this paper being written, and we don't know for sure when it will be ended. We do not rule out the possibility that future studies with longer time span could resulting more accurate and established conclusions.

## **References**

- Badan Pusat Statistik. (2021). Transaksi dan Indeks Saham di Bursa Efek. <https://www.bps.go.id/indicator/13/125/2/transaksi-dan-indeks-saham-di-bursa-efek.html>
- Bikhchandani, S., Hirshleifer, D., Welch, I. (1992). A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascade. *Journal of Political Economy* Vol. 100, No. 5 (Oct., 1992), pp. 992-1026. Published By: The University of Chicago Press.

- Chang, E. C., Cheng, J. W., & Khorana, A. (2000). An Examination of Herd Behaviour in Equity Markets: An International Perspective. *Journal of Banking & Finance*, Volume 24, Issue 10, 1 October 2000, pp. 1651-1679.
- Chesnay and Jondeau. (2000). Does Correlation between Stock Returns Really Increase During Turbulent Period? Working papers 73, Banque de France.
- Christie, G.W., Huang, R.D. (1995). Following the Pied Piper: Do Individual Returns Herd around the Market? *Financial Analysts Journal* Vol. 51, No. 4 (Jul. - Aug., 1995), pp. 31-37. Published By: Taylor & Francis, Ltd.
- Dhall, R., Singh, B. (2020). The COVID-19 Pandemic and Herding Behaviour: Evidence from India's Stock Market. *Millennial Asia*, vol. 11(3), pp. 366-390.
- Dewi, C.K. (2020). JKSE and Trading Activities Before After Covid-19 Outbreak. *RJABM (Research Journal of Accounting and Business Management)* Vol. 4, No. 1.
- Fransiska, M., Sumani, Willy, Pangestu, S. (2018). Herding Behavior in Indonesian Investors. *International Research Journal of Business Studies*, Vol 11 No 2 (2018).
- Garvis, S., Odean, T. (2001). Learning to be Overconfident. *The Review of Financial Studies*, Vol. 14, No. 1 (Spring, 2001), pp. 1-27, Published By: Oxford University Press
- Gleason, K. C., Mathur, I., & Peterson, M. A. (2004). Analysis of Intraday Herding Behavior Among the Sector ETFs. *Journal of Empirical Finance*, Volume 11, Issue 5, December 2004, pp. 681-694.
- Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*. Publisher: Stellar Classics.
- KSEI. (2021). Statistik Pasar Modal Indonesia September 2021. [https://www.ksei.co.id/files/Statistik Publik - September 2021.pdf](https://www.ksei.co.id/files/Statistik_Publik_-_September_2021.pdf)
- Kurz, C., Kurz-Kim, J., (2013). What determines the dynamics of absolute excess returns on stock markets? *Economics Letters*, Elsevier, vol. 118(2), pages 342-346.
- Lakonishok, J., Shleifer, A., Vishny, R. W. (1992). The impact of institutional trading on stock prices. *Journal of Financial Economics*, Volume 32, Issue 1, August 1992, pp. 23-43.
- Lao, P., Singh, H. (2011). Herding behaviour in the Chinese and Indian stock markets. *Journal of Asian Economics*, Volume 22, Issue 6, December 2011, pp. 495-506.
- Litimi, H., BenSaïdab, A., and Bouraoui, A. (2016). Herding and Excessive Risk in the American Stock Market: A Sectoral Analysis. *Research in International Business and Finance*, Volume 38, September 2016, pp. 6-21.
- Munkh-Ulzii, B., Choijil, E., Vieito, J. P., Méndez, C. E. E., Wong, W. K. (2020). Does herding behavior exist in the Mongolian stock market? *Pacific-Basin Finance Journal*, Volume 62, September 2020, 101352.
- Pretcher, R. R. (2001). Unconscious Herding Behaviour as the Psychological Basis of Financial Market Trends and Patterns. *The Journal of Psychology and Financial Markets* 2(3): 120-125.
- Tan, L., Chiang, T.C., Mason, J.R., Nelling, E. (2008). Herding Behavior in Chinese Stock Markets: An Examination of A And B Shares. *Pacific-Basin Finance Journal*, Volume 16, Issues 1-2, January 2008, pp. 61-77.
- Worldbank, (2021). GDP Growth (Annual %), Published Statistics. <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2020&start=1960&view=chart>
- Yao, J., Ma, C., He, W. P. (2013). Investor Herding Behaviour of Chinese Stock Market. *International Review of Economics & Finance*, Volume 29, January 2014, pp. 12-29.