

Investor Herding and COVID-19 Shock Persistency in South Korea*

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〈Abstract〉

This article investigates the effect that COVID-19 shock has on investor herding behavior in the South Korean financial market. With new variants appearing periodically, uncertainty is bound to rise, causing investors to search for information from others. I find that herding behavior increases for up to 50 days after the emergence of COVID-19. Herding behavior is shown in the Korean financial market, and COVID-19 shock increases herding, especially when the market is down for each variant. This is due to increases in uncertainty and information asymmetry.

Keywords : COVID-19, Investor herding, South Korea, Shock Persistency, Variants

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I . Introduction

Since the beginning of 2020, the virus known as COVID-19 has spread globally. The seriousness of the pandemic is shown by death tolls, lockdowns, and many other economic indices all around the world. With this unprecedented event occurring, social and economic uncertainty increases. While sophisticated investors are well-informed and form strategies to maximize returns during bad times, myopic investors rely on their unprofessional beliefs or choose to imitate others. Extreme market conditions cause investors to mutually mimic each other instead of making decisions with their own information and outlook. The inefficiency of herd behavior is theorized by Banerjee (1992).

Herding behavior increases during economic downturns and when uncertainty is high. This article investigates how long the COVID-19 shock affects herding behavior in South Korea. The shocks I consider are the first appearance of COVID-19 on January 20, 2020 and the variant announcements. I only consider the variants designated to be the Variant of Concern (VOC) by the World Health Organization. Additionally, I test the persistence of COVID shock for 30 days, 50 days, 75 days, and 100 days. I find that herding behavior increases after COVID-19 emergence and also after each variant appearance. COVID-19 shock triggers an increase in investor herding for up to 50 days. Additionally, herding behavior is more evident when the market is down. When the market is down, investors panic and become extremely risk-averse. Investors start to overvalue the losses and neglect prior profits which causes them to modify their decision-making process.

The rest of the paper is organized as follows. Section 2 reviews the literature on herding behavior in the financial markets and how COVID-19 influenced stock markets. Section 3 describes the data and methodology. Section 4 presents the results. Section 5 concludes.

II . Literature Review

Herding behaviors of investors are found in many countries and the sources on the reasons come from many factors. Mainly, investors herd because of information asymmetry.

(Lien, Hung, & Chen, 2020) find that analyst recommendations induce herding for different types of investors. Kim et al. (2021) study herding behavior around initial public offerings. Recent studies show that stock returns and market volatility are correlated with COVID-related variables. Christian Espinosa-Méndez and Jose Arias (2021) find that herding behavior increases after the COVID-19 appearance using France, Germany, Italy, United Kingdom, and Spain market data. Fang, Chung, Lee, and Yang (2021) show similar results using Eastern European stock markets samples. Ferreruella and Mallor (2021) provide evidence that uncertainty increases during bad times such as the financial crisis of 2008 and the recent COVID-19 pandemic induce investors to imitate others. Christian Espinosa-Méndez and José Arias (2021) find that Australia also experienced increases in herding behavior after the pandemic outbreak.

In Korea, observe the herding behavior between institutional investors and foreign investors. Lee and Seo (2020) find that herding behavior is influenced by dividend payout policies. Kim and Choe (2012) observe asymmetric herding behavior between buying and selling. Lim and Park (2020) find that herding of insiders promote stock crashes. These uncertainties and information asymmetries are heightened for banks and firms during crises such as COVID-19 pandemic (Suh, 2021; Kwon, 2020).

III. Data and Methodology

1. Data

I obtain daily stock returns of listed firms in the Korean stock market under KOSPI and KOSDAQ from January 1, 2000 to December 6, 2021. The total number of firms is 1,800 from all industries. Daily returns of each firm were provided by FnGuide's Dataguide. The sample begins in the year 2000 to match (Christian Espinosa-Méndez & Jose Arias, 2021) and ends at the most recent data available. The market return is represented by KOSPI index daily returns. Korean stock market is known to have investors that herd, and I test if COVID-19 shocks affect herding behaviors.

COVID-19 shocks are measured using two event periods. The first one accounts for the first acknowledgment of the emergency state due to COVID-19 by the World Health

Organization. The variable COVID takes on a value of 1 after January 20, 2020, when the WHO issued Global Health Emergency. Secondly, instead of looking at a two-year span since the COVID emergence, I test the persistence of that shock in the herding behavior by constructing indicator variables that consider only the 30 days, 50 days, 75 days, and 100 days after the declaration of emergency. These days are in calendar days because newly COVID cases are reported even during weekends that could affect market sentiments. Covid30, Covid50, Covid75, and Covid100 are indicator variables that equal 1 30 days, 50 days, 75 days, and 100 days after January 20, 2020. Variant30 and Variant50 are equal to 1 for 30 days and 50 days after the acknowledgment of each variant by the WHO. The variants used in this study are those that were designated as the Variant of Concern in the following order: Alpha-variant on December 18, 2020, Beta and Gamma-variant on January 14, 2021, Delta-variant on May 6, 2021, and Omicron-variant on November 26, 2021.

IV. Methodology

I use cross-sectional absolute deviation (CSAD) to detect herding behavior as in Chang, Cheng, and Khorana (2000). CSAD is calculated as:

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

where $R_{i,t}$ is the stock return of firm i in day t . $R_{m,t}$ is the daily return of KOSPI index. To detect whether herding behavior exists and also if herding is affected by the COVID shock, I use the following empirical specification:

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 R_{m,t}^2 + \beta_3 R_{m,t}^2 * COVID_t + \epsilon_t \quad (2)$$

In this study, I focus on β_3 as it shows whether COVID variables contribute to increasing herding behavior or not. This empirical specification observes statistically significant increases in herding behavior after COVID-19, not just whether herding exists or not.

β_2 shows a negative sign when herding exists. If β_3 is negative and statistically significant, I argue that COVID shock heightened the herding behavior due to economic uncertainty. A variety of COVID variables as explained in Section 2.1. are utilized to observe the COVID shock persistency. While there are other measures of herding, I follow Christian Espinosa-Méndez and José Arias (2021) and only use CSAD in this study.

V. Results

This section describes the data and provides the results from our regressions. <Table 1> provides the summary statistics of market returns and CSAD. Market returns are higher with slightly higher volatility after the COVID appearance. The findings from Table 2 suggest that in the Korean market, herding behavior is observed generally. This is indicated by the coefficient of $R^2_{m,t}$ across all columns in <Table 2>. Regression with Newey–West standard errors are employed in this study. I consider 5-lag order of autocorrelation. I investigate whether COVID-19 appearance affected herding by investors and also test its persistency. Column (1) uses an indicator variable that is 1 after the outbreak. Columns (2), (3), (4), and (5) use indicator variables that is 1 for 30 days, 50 days, 75 days, and 100 days, respectively, after the first appearance. Table 2 shows that the effect of COVID shock on herding behavior lasts up to 50 days and then disappears. Our finding suggests that such pandemic shock raises uncertainty for up to 50 days, which induces investors to imitate each other.

<Table 1> Descriptive Statistics

This table describes the data and presents summary statistics about the key variables of this study. Market return (Rm) is much higher after the appearance of COVID virus. Rm is the return of KOSPI index from Jan 1st, 2000 to Dec 6th, 2021.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Before					After				
VAR	N	mean	sd	min	max	N	mean	sd	min	max
Rm	4,946	0.0280	1.469	-12.02	11.95	464	0.0696	1.492	-8.394	8.601
CSAD	4,946	2.343	0.775	0.839	10.49	464	2.126	0.584	1.403	7.619

<Table 2> Persistent Effect of COVID-19 on Herding Behavior in South Korea

This table presents the coefficients from the Newey–West regression described by equation (2). Column (1) shows that herding exists in the Korean stock market. Columns (2) and (3) show that the herding behavior intensifies for up to 50 days after the first case of COVID. Results from Column (4) and (5) suggest that the herding effect disappears after 75 days. T-statistics are shown in the parenthesis and *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Variables	(1)	(2)	(3)	(4)	(5)
	AfterCovid	30DaysAfter	50DaysAfter	75DaysAfter	100DaysAfter
Abs(Rm)	0.482*** (12.68)	0.484*** (12.79)	0.486*** (12.83)	0.484*** (13.09)	0.484*** (13.05)
R_m^2	-0.019** (-2.33)	-0.019** (-2.41)	-0.019** (-2.42)	-0.020** (-2.56)	-0.020** (-2.53)
COVID* R_m^2	-0.002 (-0.15)				
COVID30* R_m^2		-0.115*** (-3.49)			
COVID50* R_m^2			-0.083*** (-6.52)		
COVID75* R_m^2				0.011 (1.04)	
COVID100* R_m^2					0.009 (0.90)
Constant	1.887*** (89.60)	1.886*** (89.84)	1.885*** (89.67)	1.886*** (91.37)	1.886*** (91.21)
Observations	5,410	5,410	5,410	5,410	5,410

The results from <Table 3> suggest that herding behavior only exists when the market is down indicated by the negative sign of $R_{m,t}^2$ in Columns (2), (4), and (6). Also, this negative coefficient increases in value after the COVID appearance for up to 50 days. This is shown by the negative and statistically significant COVID* $R_{m,t}^2$ coefficients in Columns (1), (2), (3), and (4). From the results, I find that herding exists only when the market is down, but increases after COVID-19 regardless of the market status. When market conditions are down, investors become pessimistic and overestimate their losses causing them to behave irrationally. Instead of relying on their own information and perspectives, investors start to imitate others as information asymmetry increases, especially during pandemics such as COVID-19.

<Table 3> Persistent Effect of COVID-19 on Herding Behavior during Good and Bad Times

This table presents the coefficients from the Newey–West regression described by equation (2). The sample is divided into good times and bad times. Good times are when the market return is positive while bad times are when the market return is negative. The influence of COVID in increasing herding behavior exist in both good times and bad times. This effect also lasts for up to 50 days. T-statistics are shown in the parenthesis and *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	$R_{m,t} > 0$	$R_{m,t} < 0$	$R_{m,t} > 0$	$R_{m,t} < 0$	$R_{m,t} > 0$	$R_{m,t} < 0$
Abs(Rm)	0.414*** (8.40)	0.535*** (11.26)	0.415*** (8.44)	0.539*** (11.31)	0.407*** (7.41)	0.532*** (11.82)
R_m^2	-0.004 (-0.40)	-0.029*** (-2.93)	-0.005 (-0.41)	-0.029*** (-2.95)	-0.002 (-0.18)	-0.030*** (-3.33)
COVID30* R_m^2	-0.135*** (-5.49)	-0.101*** (-2.62)				
COVID50* R_m^2			-0.150*** (-5.02)	-0.076*** (-8.70)		
COVID75* R_m^2					-0.010 (-1.31)	0.028** (2.34)
Constant	1.904*** (70.41)	1.880*** (70.80)	1.903*** (70.50)	1.878*** (70.56)	1.906*** (65.70)	1.882*** (73.35)
Observations	2,890	2,512	2,890	2,512	2,890	2,512

<Table 4> Persistent Effect of COVID-19 Variants

This table uses different variant appearances. This table shows that herding intensifies only during bad times. T-statistics are shown in the parenthesis and *, **, *** indicate statistical significance at 10%, 5%, and 1%, respectively.

Variables	(1)	(2)	(3)	(4)
	$R_{m,t} > 0$	$R_{m,t} < 0$	$R_{m,t} > 0$	$R_{m,t} < 0$
Abs(Rm)	0.414*** (8.35)	0.539*** (11.35)	0.416*** (8.41)	0.544*** (11.44)
R_m^2	-0.004 (-0.39)	-0.030*** (-2.99)	-0.005 (-0.42)	-0.030*** (-3.03)
Variant30* R_m^2	-0.019 (-0.38)	-0.110*** (-5.49)		
Variant50* R_m^2			-0.038 (-0.84)	-0.089*** (-7.60)
Constant	1.904*** (70.27)	1.879*** (70.88)	1.903*** (70.30)	1.876*** (70.61)
Observations	2,890	2,512	2,890	2,512

<Table 4> uses indicator variables that account for the variants. Alpha, Beta, Gamma, Delta, and Omicron variants are all considered. Consistently with Table 3, I observe that the COVID shock for each variant on herding behavior persists for up to 50 days, but only for bad market periods. The result presented in <Table 4> is consistent with previous findings that herding behavior intensifies when uncertainties and information asymmetry increases. Results without Omicron produced consistent results.

VI. Conclusion

COVID-19 pandemic has changed the course of history in the field of economics and finance (Goodell, 2020). With so many uncertainties that come with the crisis, it is essential to know how such shocks affect the markets and behaviors of people. Additionally, the longevity of the shocks also needs further examination to better prepare for upcoming crises. This study contributes with a sample from stock prices listed under KOSPI and KOSDAQ in South Korea to show that herding behavior increased after COVID-19, especially for bad market periods, and its effect lasts for up to 50 days.

References

- Banerjee, A. V., "A Simple Model of Herd Behavior," *The Quarterly Journal of Economics*, 107(3), (1992), 797–817.
- Chang, E. C., J. W. Cheng, and A. Khorana, "An Examination of Herd Behavior in Equity Markets: An International Perspective," *Journal of Banking & Finance*, 24(10), (2000), 1651–1679.
- Espinosa-Méndez, C. and J. Arias, "COVID-19 Effect on Herding Behaviour in European Capital Markets," *Finance Research Letters*, 38, (2021), 101787.
- Espinosa-Méndez, C. and J. Arias, "Herding Behaviour in Australian Stock Market: Evidence on COVID-19 Effect," *Applied Economics Letters*, 28(21), (2021), 1898–1901.
- Fang, H., C.-P. Chung, Y.-H. Lee, and X. Yang, "The Effect of COVID-19 on Herding Behavior in Eastern European Stock Markets," *Frontiers in Public Health*, 9, (2021), 695931.
- Ferreruela, S. and T. Mallor, "Herding in the Bad Times: The 2008 and COVID-19 Crises," *The North American Journal of Economics and Finance*, 58, (2021), 101531.
- Goodell, J. W., "COVID-19 and Finance: Agendas for Future Research," *Finance Research Letters*, 35, (2020), 101512.
- Jun, Y. and H. Choe, "Why Do Institutional Investors and Foreign Investors Herd in the Short Horizon?: Evidence from the Korean Stock Market," *The Korean Journal of Financial Management*, 30(1), (2013), 1–37.
- Kim, J. H. and H. Choe, "The Herding Behavior of Professionals and Its Impact in the Korean Stock Market," *Korean Journal of Financial Studies*, 41(3), 2012, 463–495.
- Kim, S., D. Lim, and J. Kim, "New Measures of Herding Behavior and Cross-sectional Time Dispersion (CSTD) by IPO Firms in Chinese IPO Markets," *Asian Review of Financial Research*, 34(2), (2021), 1–29.
- Kwon, Y., "Local Dependence, Exogenous Shock, and Firm Value: Evidence from Korea's COVID-19 Crisis," *Asian Review of Financial Research*, 33(4), (2020), 599–629.
- Lee, J. H. and S. Suh, "Payout Policies and Foreign Investor Herding," *Review of International Money and Finance*, 10(1), (2020), 105–131.
- Lien, D., P.-H. Hung, and L.-W. Chen, "Analyst Recommendations, Herding Intensity,

and Trading Performance,” *Asia-Pacific Journal of Financial Studies*, 49(5), (2020), 772-802.

Lim, B. and S. Park, “Insider Trade Clustering and Stock Price Crashes,” *The Korean Journal of Financial Management*, 37(3), (2020), 1-38.

Suh, S., “The Effect of COVID19 on Systemic Risk: The Case of Korea,” *Korea Deposit Insurance Corporation*, 22(1), (2021), 1-38.

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군집거래와 COVID-19의 충격지속성 분석

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〈요 약〉

본 연구는 한국금융시장에서 군집거래가 존재하는지를 보이고, 그 성향이 코로나-19 팬데믹 이후에 어떻게 변했는지를 분석한다. COVID-19가 전 세계를 휩쓸며 금융시작에 불확실성은 증가하고 투자자들은 정보비대칭성에 대한 두려움이 쌓이면서 군집거래가 증가한다. 코로나 팬데믹이 군집거래에 어떤 영향을 미치고, 얼마나 오래 미치는지 분석한다. 첫 확진자 이후 50일까지 군집거래에 영향을 미쳤다는 결과를 보이고 변이들은 시장이 나쁠 때만 영향을 미친다는 결론이 나온다. 이는 불확실성과 정보비대칭이 존재하기 때문이라 설명된다.

주제어 : 군집거래, 충격지속성, 코로나 변이, COVID-19

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