



## COVID-19 and Herd Behavior in Cryptocurrency Market<sup>1</sup>

Mahdieh Rezagholizadeh<sup>2</sup>, Saeed Rasekhi<sup>3</sup>, Mobina Pourali<sup>4</sup>

Received: 2024/02/26

Accepted: 2025/02/23

### INTRODUCTION

The COVID-19 pandemic, beginning in late 2019, triggered lockdowns and quarantines that caused complex economic problems across various sectors, including financial markets and the relatively new cryptocurrency market. For cryptocurrencies, an unprecedented shock, empirical evidence indicates that Bitcoin did not function as a safe-haven asset during the pandemic. In fact, it sometimes exhibited behavioral anomalies, such as conditional and unconditional herding. In such volatile conditions, where investors may share similar fears and experience widespread financial panic, analyzing trader behavior in the cryptocurrency market becomes particularly relevant.

### MATERIALS AND METHODS

This research analyzes herd behavior in cryptocurrency markets using the Cross-Sectional Absolute Dispersion (CSAD) method and Ordinary Least Squares (OLS) regression. The analysis spans five distinct periods: the overall period, pre-

1. doi: 10.22051/jfm.2025.46547.2905

2. Associate Professor, Department of Economics, Faculty of Economics & Administrative Science, Mazandaran University, Babolsar, Iran. Corresponding Author. Email:m.gholizadeh@umz.ac.ir.

3. Professor, Department of Economics, Faculty of Economics & Administrative Science, Mazandaran University, Babolsar, Iran. Email:sa.rasekhi@gmail.com

4. M.Sc. Department of Economics, Faculty of Economics & Administrative Science, Mazandaran University, Babolsar, Iran. Email:mobina.pourali1935@gmail.com.

COVID-19, during the COVID-19 pandemic, bullish markets, and bearish markets. Daily price data for four major cryptocurrencies by market capitalization—Bitcoin, Ethereum, Tether, and Ripple—from January 2019 to December 2021 are utilized. To examine herding behavior during the overall period, the CSAD model is estimated as follows:

$$CSAD_t = \beta_0 + \beta_1 |R_{m,t}| + \beta_2 (R_{m,t})^2 + \varepsilon_t \quad (1)$$

Where:

$R_{m,t}$  is the market portfolio return, calculated based on the total cryptocurrency market index return. According to this model, when the deviation of the studied cryptocurrency's return from the market return decreases, signs of herding behavior. The model uses the coefficient of the squared market return to indicate the presence of herding behavior in the cryptocurrency market. When this coefficient is negative, it suggests the presence of herding behavior in the market.

$CSAD_t$  is the cross-sectional standard deviation of the daily returns of the studied cryptocurrency (Bitcoin) from the total market index return.

Using model (1), the presence or absence of herding behavior in the market can be examined. A negative and significant  $\beta_2$  coefficient indicates the presence of herding behavior in the market.

To evaluate the effect of COVID-19 on herding behavior in the cryptocurrency market, equation (2) is estimated:

$$CSAD_t = \beta_0 + \beta_1 D^{COVID} |R_{m,t}| + \beta_2 (1 - D^{COVID}) |R_{m,t}| + \beta_3 D^{COVID} (R_{m,t})^2 + \beta_4 (1 - D^{COVID}) (R_{m,t})^2 + \varepsilon_t \quad (2)$$

$D^{COVID}$  is a dummy variable indicating the period before and after the COVID-19 outbreak. The value of the dummy variable  $D^{COVID}$  is one after December 1, 2019 (when COVID-19 was declared a pandemic) ( $D=1$ ) and zero otherwise ( $D=0$ ). If  $\beta_3$  is negative and statistically significant, it indicates herding behavior in the cryptocurrency market after the COVID-19 outbreak. Conversely, a negative and significant  $\beta_4$  indicates herding behavior in the cryptocurrency market before the COVID-19.

Additionally, to examine herding behavior in bullish and bearish market conditions, model (3) is specified:

$$CSAD_t = \beta_0 + \beta_1 (1-D) |R_{m,t}| + \beta_2 D |R_{m,t}| + \beta_3 (1-D) (R_{m,t})^2 + \beta_4 D (R_{m,t})^2 + \varepsilon_t \quad (3)$$



$D$  is a dummy variable indicating bullish or bearish market conditions. Bullish and bearish cryptocurrency markets are determined based on changes in the total market index (TOTAL) during the studied period. The value of the dummy variable  $D$  is one in bearish ( $D=1$ ) and zero in bullish ( $D=0$ ) market conditions. Accordingly, if  $\beta_4$  is negative and statistically significant, it indicates herding behavior in bearish market conditions, while a negative and significant  $\beta_3$  indicates herding behavior in bullish market conditions.

### RESULTS AND DISCUSSION

The estimation results for the overall period reveal a negative and statistically significant  $\beta_2$  coefficient, indicating strong herding behavior throughout the market during the study period. This suggests that investors followed market performance, confirming the presence of herding behavior during the COVID-19 period.

The estimation results of model (7) show a negative but statistically insignificant  $\beta_4$  coefficient before the COVID-19 period. Thus, herding behavior was not observed in the market prior to the outbreak. This suggests that cryptocurrency traders made rational decisions and did not mimic the decisions of other investors in this sector before the COVID-19 period.

A negative and significant  $\beta_3$  coefficient in the bullish period confirms significant herding behavior during rising market conditions. Conversely, the  $\beta_4$  coefficient is negative but not significant in bearish markets. This indicates that during bullish periods, when cryptocurrency prices are consistently increasing, investors tend to exhibit herding behavior.

### CONCLUSION

The study's results demonstrate strong herd behavior across the entire period, indicating that investors generally follow market trends. Notably, herd behavior was not observed in the pre-COVID-19 period. However, the COVID-19 pandemic period was associated with significant herd behavior in cryptocurrency markets. Furthermore, the findings confirm significant herd behavior only during bullish markets, suggesting that cryptocurrency traders during the COVID-19 pandemic and in bullish markets tend to make similar trading decisions.

**Keywords:** Herd Behavior, COVID-19, Cryptocurrency, Bitcoin, Bullish Market, Bearish Market.

**JEL Classification:** G10, G11, G15.

#### COPYRIGHTS



This license allows others to download the works and share them with others as long as they credit them, but they can't change them in any way or use them commercially.

