

# Exploring The Herding Behavior and Its Impacts in Cryptocurrency Markets\*

Prof. Dr. Pınar EVRİM MANDACI<sup>1</sup>, Assoc. Prof. Dr. Efe Ç. ÇAĞLI<sup>2</sup>, Prof. Dr. F.  
Dilvin TAŞKIN YEŞİLOVA

<sup>1</sup>Dokuz Eylül University/ Faculty of Business

<sup>2</sup>Dokuz Eylül University/ Faculty of Business

<sup>3</sup>Yaşar University/ Faculty of Business

## Abstract

This paper determines the existence of the “herd behavior” and the factors that may cause herding in cryptocurrency markets. We consider the impacts of volatility, sensitivity factors, FoMO and overconfidence on herding. In addition, we examine the influence of Covid 19 pandemic on herd behavior. Our dataset covers January 1, 2019 – September 10, 2022, obtained from the Binance crypto exchange and augmento.ai. We use intraday aggregate trade data and construct daily herding intensity statistics for negative, positive, and zero trades in the sense of Patterson and Sharma (2006). We compute realized volatility series exploiting the Parkinson’s (1980) range-based measure. Following Balcilar et al. (2017), the volatility series are log-detrended. The sentiment measures are from three internet sources, Bitcointalk, Reddit, and Twitter. The sentiment signals (FOMO, hopeful, negative, positive, and uncertain) are smoothed using the exponential smoothing (ETS) models in the *statsmodule Python* module. We estimate Fourier-type Granger causality tests, developed by Nazlioglu et al. (2019). Our results show the bi-directional causality between sentiment signals from Twitter and the herding intensity statistics at the conventional significance levels. The sentiment signals from Reddit have a limited impact on the herding statistics, but most of the signals significantly cause volatility measures. Bitcointalk sentiment signals do not cause any herding, volatility, and volume measures. The volatility and volume measure significantly cause sentiment signals at the 10% level, or better. Finally, we find that herding

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behavior causes volatility and volume at the 1% level. Our results provide important implications for investors and portfolio managers.

**Keywords:** cryptocurrencies; herding; sentiment; overconfidence; volatility