

# **HERDING BEHAVIOR IN VOLATILE MARKET REGIMES: AN IN-DEPTH ANALYSIS OF COINS, TOKENS, PANDEMIC, PENNY, AND PRICEY CRYPTOCURRENCIES**

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## **ABSTRACT**

This study comprehensively analyzes herding behavior in the cryptocurrency market. First, we conduct an in-depth investigation of herding behavior in the overall cryptocurrency market. Second, we form several groups of cryptocurrencies according to their characteristics and analyze whether each group behaves similarly in volatile market regimes. Third, we investigate whether herding existed in each cryptocurrency group before and during the COVID-19 pandemic. Using a sample of 227 cryptocurrencies constituting nearly 95% of market capitalization, we reveal that herding behavior was absent in the overall sample and sub-samples comprising cryptocurrency groups. Further, the anti-herding behavior implies a contrarian response to the crowd. This anti-herding can be explained from two views: rational behavior of taking profit from market irrationality and irrational behavior due to fear or recency bias.

**Keywords:** Cryptocurrency, herding, coins, tokens, COVID-19.

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## **1. INTRODUCTION**

Surging as the new hype among investors, the market activity of cryptocurrency has attracted academics, policymakers, regulators, and hedge funds to exploit the opportunity of cryptocurrency as a new asset class. Empirically, there is an abundance of findings related to market dynamics (Urquhart, 2018; Corbet et al., 2020), regulation (Feinstein & Werbach, 2021; Yadav et al., 2020), portfolio management (Jiang & Liang, 2017; Boako et al., 2019, and efficiency (Urquhart, 2016; Urquhart, 2017) of these cryptocurrencies. A systematic analysis by Corbet et al. (2019) provides a comprehensive literature analysis of this matter.

From the perspective of market dynamics and efficiency, the proponent of behavioral finance attributes the fluctuation in cryptocurrency returns to investor behavior, famously known as herding. It posits that investors irrationally imitate the decisions of other investors while ignoring their unique investment strategies. Cryptocurrency investors irrationally respond to the bullish and bearish markets by following the collective consensus. As a result, investors are exposed to inefficient prices in cryptocurrency markets, resulting in an irrational momentum strategy. Unfortunately, prior literature provides mixed findings related to herding behavior in the cryptocurrency market. The existing literature indicates that some studies have found assertive herding behavior under different circumstances, while others report an absence of herd behavior. Appendix C provides a summary of selected influential literature on herding in cryptocurrencies.

One reason for the mixed findings of cryptocurrency herding behavior is that prior studies have only focused on selected renowned cryptocurrencies like Bitcoin while ignoring the majority of over 200 liquid cryptocurrencies. Furthermore, a few studies that have analyzed multiple cryptocurrencies have pooled all cryptocurrencies assuming that they behave in a similar manner (i.e.,

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Kallinterakis and Wang, 2019; Omrane-Adjepong et al., 2021). To the best of our knowledge, no prior study distinguishes between coins, tokens, big-capitalization, small-capitalization, pricey, and penny cryptocurrencies. Furthermore, no previous study has investigated herding while considering the trading volume and investors' familiarity with cryptocurrency coins and tokens that may exhibit different investor behavior.

Additionally, the COVID-19 pandemic has opened an opportunity for developers to issue more cryptocurrencies (such as pandemic cryptocurrency), which may behave differently as compared to their counterparts. Given the different behavior of various cryptocurrencies, a more comprehensive understanding of how the cryptocurrency market behaves is critical to the digital finance literature. However, this critical topic has not received direct attention in the current literature.

In view of the abovementioned gap, this study comprehensively analyzes the behavior of several types of cryptocurrencies. To achieve this objective, we categorize the cryptocurrencies of our sample into four groups based on type, market capitalization, price, and time of issue. The first group, categorized based on type, is divided into coins and tokens. The second group, categorized based on market capitalization, consists of Big-5 cryptocurrencies and others. Further, we group the cryptocurrencies according to their prices, i.e., pricey and penny. Lastly, we formed a group of cryptocurrencies initiated during the COVID-19 pandemic. Appendix A presents the definitions of each group.

The existing literature comprehensively analyzes herding in cryptocurrency types is scarce and remains a black box. We argue that different types of cryptocurrencies exhibit different market behavior in volatile market regimes. Figure 1 presents the risk and reward of each cryptocurrency group, which indicates a substantial difference in the risk and reward relationship of several cryptocurrency groups such as coins, tokens, penny, big-5, and pricey. Given the above discussion and the gap in the literature, this study has several objectives. First, we conduct an in-depth investigation of herding behavior in the overall cryptocurrency market. Second, we form several groups of cryptocurrencies according to their characteristics and analyze whether each group has similar behavior in volatile market regimes. Third, we investigate whether herding was present in each cryptocurrency group before and during the COVID-19 pandemic.

Our study is different from the recent influential studies on cryptocurrency herding, such as Philippas et al. (2020), Yarovaya et al. (2021), Corbet et al. (2020), and other empirical findings (see Appendix C), which analyzed herding behavior in cryptocurrency markets. However, these studies did not separately analyze cryptocurrency herding in various groups like coins, tokens, pennies, and pricey cryptocurrencies. In addition, these studies used a relatively small sample comprising only popular cryptocurrencies. Similarly, most existing studies do not analyze how the COVID-19 pandemic has affected investor behavior toward cryptocurrencies.

The study has several unique contributions. First, we analyzed data for over 200 active cryptocurrencies, unlike most earlier literature focusing on a few cryptocurrencies at a time. Second, we categorize these cryptocurrencies into four distinct groups based on type, market capitalization, price, and time of issue. Third, we find novel evidence that different groups of cryptocurrencies exhibit different market behavior. Fourth, we find no systematic evidence of herding behavior, suggesting that several cryptocurrencies follow the rational asset pricing hypothesis.

The remainder of the paper is structured as follows. The subsequent section provides a literature review. It is followed by the methodology, results, and discussion. The last section concludes the study by highlighting the main findings, limitations, and suggestions for future research.

## **2. LITERATURE REVIEW**

Conventional finance theories suggest that investors and other market participants always make rational investment decisions. These rational decisions assume that investors have perfect information in the market that they can use for detailed analysis before making investment decisions (Malkiel and Fama, 1970). On the contrary, the proponents of behavioral finance argue that investors are human beings, and their investment decisions are affected by human psychology and emotions (Easley and Kleinberg, 2012; Brahmana et al., 2012b; Shiller, 2003). Moreover, behavioral finance theorists believe investors do not always make rational investment decisions. Their decision-making is affected by emotions, sentiments, and behavioral biases, which sometimes lead to market volatility (Kahneman and Tversky, 1973; Shleifer and Summers, 1990). One such phenomenon frequently observed among investors is referred to as herding. Herding or herd behavior occurs when investors irrationally replicate or follow the investment decisions of other market participants while ignoring their own beliefs and analysis (Shiller, 2003; Brahmana et al., 2012b; Easley and Kleinberg, 2012; Bikhchandani and Sharma, 2000). Prior studies have argued that herding causes asset prices to deviate from their fundamental values, creating unnecessary volatility and noise in financial markets (Kumar, 2020).

This study intends to comprehensively examine the herding behavior of cryptocurrencies. Cryptocurrency is a digital currency based on blockchain technology and was introduced as a substitute for paper money that operates in a decentralized