

Behavioral Economics of Cryptocurrency Investment Risk Perception and Herding Effect

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Abstract—This article examines how behavioral forces — especially risk perception and herding — shape cryptocurrency investment and the broader crypto market. Drawing on empirical studies, market-level statistics, and investor-survey evidence since 2016, it highlights why crypto investors systematically differ from traditional investors, how sentiment and social cues amplify price swings, and what economic consequences follow for capital allocation, market stability and policy design. The paper shows that biased risk perception and herd dynamics raise volatility, create episodic bubbles and crashes, and alter who benefits (and who loses) from crypto innovation. It concludes with implications for investors, platforms and regulators aimed at reducing avoidable harm while preserving useful innovation.

Keywords— behavioral finance, cryptocurrency, risk perception, herding, investor sentiment, market volatility, retail investors, Chainalysis

Cryptocurrency markets are a natural laboratory for behavioral economics because they combine easy retail access, high leverage and fast information flows. People enter crypto markets for many reasons: speculation, a belief in the technology, desire for quick gains, or hedging against local currency problems. These motives interact with psychological biases — overconfidence, optimism bias, fear of missing out (FOMO), and loss aversion — to shape both individual choices and aggregate outcomes. Several empirical studies show that investors' subjective perception of risk in crypto often departs from objective measures: many retail investors downplay downside probabilities after observing rising prices, treat past returns as signals of future performance, and overweight anecdotal success stories when making allocation decisions. This gap between perceived and objective risk helps explain why retail portfolios in crypto tend to be concentrated and volatile.

Herding — where investors imitate others rather than act on independent information — is especially visible in crypto. Herd behavior can be driven by informational herding (copying others to learn) or reputational herding (professional managers following peers to avoid underperformance). In crypto, social media, influencer endorsements, and trending narratives accelerate observational learning and reputational concerns, producing rapid, self-reinforcing buying waves. Academic analyses document statistically significant herding episodes across multiple crypto assets, particularly during periods of market stress and major news events; these episodes often precede sharp reversals. For instance, studies using daily returns and regime-switching models find increased herding during market downturns and during pandemic-related volatility, indicating that investors are more likely to follow the crowd when uncertainty rises.

Behavioral biases change how risk is priced in crypto markets. Traditional finance models assume rational agents who diversify and price risk efficiently, but crypto markets frequently show deviations from these assumptions. Overconfidence and an optimism bias lead many investors to hold very large positions relative to their wealth, amplifying

price movements. Anchoring to recent highs, mental accounting of “house money,” and confirmation bias further reduce the inclination to hedge or rebalance. The upshot is higher realized volatility and heavier downside tails than would be expected if participants behaved like diversified, risk-averse investors. Empirical work finds that during bull runs, measures of retail activity and sentiment spike while realized volatility can increase by multiples relative to quieter periods — a pattern consistent with biased risk perception fueling speculative runs.

Quantitative evidence supports this behavioral interpretation. Chainalysis estimates show that aggregate realized investor gains and losses in recent years have been highly concentrated across time: estimated total gains reached very large sums in 2021, were followed by heavy losses in 2022, and partially recovered in 2023 — a pattern that aligns with boom-bust cycles driven in large part by shifting sentiment and herding among retail participants. The 2023 estimate of global investor gains, for example, was a fraction of 2021's peak, illustrating how quickly perceived windfalls can evaporate when sentiment reverses. At the same time, on-chain adoption metrics show rapid increases in grassroots participation in several countries, suggesting that behavioral drivers — local narratives, influential figures, and network effects — matter for real adoption and capital flows.

Herding also alters market microstructure and the transmission of shocks. When many investors chase the same signals or assets, liquidity can become dangerously thin in stressed moments: order books that looked deep during calm times can evaporate during sell-offs, causing price gaps and slippage that propagate losses quickly across markets. This mechanism was visible in multiple episodes where large sell orders or protocol-specific shocks triggered cascades through other venues via margin calls, automated liquidations and correlated algorithmic strategies. Studies that analyze transaction-level or high-frequency data confirm that herding increases intraday co-movement among related assets and raises the probability of extreme price moves.

Investor heterogeneity matters: not all participants herd for the same reasons or at the same times. Institutional or sophisticated participants sometimes act as stabilizers (providing liquidity and taking contrarian positions), but in crypto the institutional presence is uneven and often constrained by regulatory uncertainty or custody challenges. Retail investors — who make up a large share of trading volume in many regions — are more prone to social cues and simpler heuristic decision rules. Surveys and recent literature reviews show that retail crypto investors tend to be younger, more risk-tolerant, and more likely to use social media and nontraditional information sources, which amplifies the reach and speed of herding signals. These demographic and informational differences help explain why behavioral effects are so pronounced in crypto compared with many traditional asset classes.

The economic consequences of biased risk perception and herding are broad. First, they increase short-term volatility and the cost of capital for projects seeking long-term funding; venture and infrastructure investors demand higher returns to compensate for episodic liquidity shocks and reputational risk. Second, boom-bust cycles can misallocate resources: entrepreneurs and labor may be drawn into speculative projects during peaks and then face abrupt demand collapse during troughs, raising unemployment and wasted investment in the short run. Third, consumer welfare suffers: less sophisticated savers who chase past returns can experience large losses that reduce household consumption and financial resilience. Finally, systemic risks can grow when herding concentrates exposures across platforms or token types, making coordinated failures more likely. Historical episodes where major crashes followed waves of enthusiastic retail entry illustrate these distributional and macroeconomic pathways.

Policy and market responses can reduce the most damaging behavioral outcomes without squashing legitimate innovation. Platforms and exchanges can implement nudges and design changes — for example, clearer risk disclosures, mandatory cooldown periods for large trades, or default diversification prompts — that help correct cognitive errors. Regulatory tools include stronger investor education, tighter advertising rules for high-risk products, and disclosure requirements for leveraged retail offerings. Market-structure interventions, such as circuit breakers, better liquidity provisioning standards, and improved margin rules, can blunt the speed of panic-driven runs. Empirical work suggests that credible, transparent regulatory communication reduces informational herding because it provides independent signals that investors can use instead of relying solely on noisy social cues.

There are limits to policy: overregulation risks pushing activity into unregulated corners where behavioral harms may be worse, and some forms of social learning are informationally efficient (copying a knowledgeable trader can be rational when information is costly). The policy aim should

therefore be proportional: lower the odds of catastrophic consumer losses and systemic spillovers while preserving pathways for productive experimentation. A pragmatic package combines targeted market rules, consumer protection measures, public education, and monitoring tools that use on-chain and off-chain data to detect emerging herding patterns early. Policymakers who adopt data-driven, adaptive frameworks — rather than one-size-fits-all bans — will likely reduce the economic cost of behavioral biases while allowing beneficial financial innovation to continue.

In short, behavioral biases — especially distorted risk perception and herding — are central drivers of crypto market dynamics. They help explain why these markets experience extreme volatility, why retail involvement leads to outsized boom-bust cycles, and why targeted interventions can materially improve outcomes for investors and the broader economy. Recognizing the behavioral roots of crypto instability is the first step toward better market design, smarter regulation and more resilient financial participation..

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