

BEHAVIORAL BIASES AND CRYPTOCURRENCY INVESTING: AN EMPIRICAL ANALYSIS OF RISK PERCEPTION AND IRRATIONAL DECISION-MAKING

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ABSTRACT

Men and women without much knowledge about traditional finance, have been drawn to cryptocurrencies as a novel way to invest. Because the cryptocurrency market is very volatile, not regulated, information spreads rapidly on social media and trades can happen any time, it has become a place where behavioral biases thrive. The authors tried to discover through experiments how behavioral biases played a role in influencing decisions to invest in bitcoin.

In this study, four major biases—overconfidence, herding, loss aversion and anchoring—are studied through concepts from behavioral finance. Doing bitcoin investor research, the research combined examination of social network chatter with a survey of 500 active bitcoin users. Evidence from the results points out that, when making important decisions, retail investors are greatly affected by these biases. Although herding means people will follow popular trends, no matter what the facts say, loss aversion causes them to keep holding onto assets that are decreasing in value. Anchoring on past experience sets prices lower than they should be while overconfidence leads to overtrading and not properly considering risk. According to stats, the unconscious beliefs can result in people seeing risks in the market differently and managing their portfolios poorly. Also, because of social media posts by influencers and discussions on forums, the effects of behavioral biases are easier to observe in cryptocurrencies than in ordinary financial markets. Adding to earlier studies, the proof gathered in the research demonstrates the behavioral risks that arise in the cryptocurrency investment world. The study helps explain how investors, platform builders and government regulators can deal with these difficulties. The results show that more knowledge about finance, small changes in behavior and new laws are needed to help investors make better decisions in digital asset markets.

KeyWords: Cryptocurrency; Behavioural Bias; Overconfidence; Herding Behavior; Loss Aversion; Anchoring Bias; Risk Perception; Irrational Decision-Making

1. INTRODUCTION

Thanks to the fast growth of financial technology, new methods and platforms meant for investing have come about more quickly than before. Recently, cryptocurrencies—digital assets not controlled by traditional financial systems—have caused a lot of disruption in the tech sector. Because there is the hope of earning a lot along with the chance of losing virtually everything, Bitcoin, Ethereum and numerous other cryptocurrencies have attracted people globally. Exaggerated price swings, a hopeful mindset and weak calculation rules are what make the cryptocurrency market totally different from common financial markets. As a result of these factors, how investors think affects the market's outcomes.

1.1 Growth in cryptocurrencies.

Since Bitcoin was created in 2009, the cryptocurrency market has seen fast growth, with investment coming from both major institutions, ordinary investors and speculators. Since anyone can take part in crypto investing, without needing to become a finance expert, it's become easier for newcomers to handle risky investments. In addition, being accessible to news can lead people to think distorted thoughts, especially in markets heavily influenced by hype, the internet and fast trends.

1.2 Behavioral Finance.

Many financial theories, one being the EMH, are built on the idea that investors behave logically to achieve maximum satisfaction from all the data they use. Even so, the flaws in this approach became clear when looking at bizarre events in the market. To bridge this gap, behavioral finance uses psychological research to explain how heuristics, feelings and interactions with others affect investors. Researching this area helps us better understand how decisions work when it comes to new assets such as cryptocurrencies.

1.3 The crypto markets and behavioral biases.

Within the bitcoin market, behavioral biases are often made worse. Instead of carefully analyzing information logically, investors often use simple cognitive methods because the market is new, there is limited historical information, prices change quickly and news about the stock spreads virally. Bias plays a large role in investment, mainly due to loss aversion, herding, anchoring and overconfidence. For instance, the main reason investors bought Dogecoin in 2021 was due to social media fads and famous people supporting it, instead of its real value. It demonstrates why it is important to study how biases influence investors when markets are highly variable.

1.4 Objectives of the Research

- Explore which kinds of behavioral biases are led by bitcoin investors the most.
- Study how these biases change people's opinions about risky situations.
- Examine how individuals may make wrong or emotional investments in cryptocurrencies.

1.5 Significance of the Study

- There are important ramifications for comprehending behavioral biases in relation to bitcoin investing:
- Regarding investors: improves decision-making and self-awareness.
- For financial educators: Identifies areas that require specific instruction and training.
- For platform developers: Promotes the creation of instruments that lessen cognitive mistakes.
- For decision-makers: provides information for regulatory plans intended to safeguard consumers and maintain market stability.
- This paper offers a thorough, data-driven investigation of behavioral factors in the crypto investing environment, which adds to both academic literature and practical debate.

2. LITERATURE REVIEW

2.1 Behavioral Finance: An Overview

The shortcomings of traditional finance models, especially the Efficient Market Hypothesis (EMH), gave rise to behavioral finance. According to EMH, markets are always efficient and rational since asset prices instantaneously reflect all available knowledge (Fama, 1970). Bubbles, collapses, and irrational investor behavior are just a few examples of market oddities that have demonstrated how frequently actual actions differ from theoretical predictions.

As developed by researchers such as Daniel Kahneman & Amos Tversky (1979), behavioral finance incorporates knowledge from cognitive psychology into the fields of finance and economics. Their creation of Prospect Theory showed that humans show asymmetric preferences and evaluate gains and losses in relation to a reference point, rather than constantly acting to maximize expected utility.

The foundation for comprehending how people consistently make poor decisions under uncertainty errors that are especially common in financial decision-making—was established by this approach.

2.2 Key Behavioral Biases in Investment Decisions

Numerous cognitive and emotional biases have been documented in behavioral finance literature. The following are especially relevant to cryptocurrency investing:

2.2.1 Overconfidence Bias

The term "overconfidence" describes an investor's propensity to exaggerate their level of expertise, forecasting skills, or influence over investing results. According to Barber and Odean (2001), this tendency frequently leads to excessive trading, underestimating risk, and failing to diversify. Overconfidence frequently leads to bad judgments in the cryptocurrency market, as investors frequently depend on subjective research and speculative forecasts.

2.2.2 Herding Behavior

When investors follow the lead of others instead of conducting their own independent research, this is known as herding. In extremely unpredictable markets, when people are looking for social affirmation, this is particularly prevalent (Banerjee, 1992). Real-time information from social media sites like Twitter, Reddit, & Telegram, a where popular currencies frequently see abrupt price spikes regardless of their inherent worth, amplifies herding in the cryptocurrency space.

2.2.3 Loss Aversion

The propensity to favor preventing losses above achieving comparable gains is known as loss aversion. Kahneman & Tversky (1979) assert that the psychological impact of losses is roughly twice that of wins.

2.2.4 Anchoring Bias

When individuals allow a single fact to play a big role in their decisions, that is called anchoring. Investors who own cryptocurrency might decide to sell their investments when they notice the highest price ever and think it could regain that level even with new details proving otherwise.

2.3 Influence of behavioral biases on Cryptocurrency

This vulnerability to distorted behavior is partly because of several special properties of cryptocurrency markets. High volatility makes people react strongly when they experience fear or greed. Lack of internal rating systems leads investors to resort mainly to sentiments and past prices. Because the market is spread out and not well regulated, it allows sudden changes, manipulations and wrong information to become widespread. The way people react to cryptocurrencies is often influenced by messages from online communities & influencers. According to research by Glaser et al. (2014) and Baur et al. (2018), the aim of many cryptocurrency investors is to strike it rich swiftly, rather than using cryptocurrencies which encourages certain biases. Empirical evidence has revealed important details about how investors behave in the crypto market.

2.4 Behavioral biases of cryptocurrency investors.

Looking at user data from a big cryptocurrency exchange, Pelster, Breitmayer and Hasso discovered that individual investors often followed the same trend as others, especially when the market was very volatile (2019). According to Stix (2021), younger investors who joined the cryptocurrency market through social media influence frequently exhibited overconfidence and poor risk judgment. Cretarola & Figà Talamanca (2020) discovered evidence of feedback trading patterns, which are associated with anchoring and representativeness bias and occur when previous price movements excessively impact future investment decisions.

2.5 Gaps in the Literature

Even if behavioral crypto finance is becoming more popular, there are still a number of gaps: With few empirical findings derived from sizable, heterogeneous investor samples, the majority of research is theoretical or anecdotal.

The research we have often takes a narrow view by studying one type of prejudice at a time.

Only a small number of investigations consider the link between risk perception and prejudice and both are necessary for understanding why some people behave in unreasonable ways.

This study addresses these issues by closely examining how behavioral biases influence how cryptocurrency risks are perceived and investment decisions are made.

3. METHODOLOGY

The study was conducted using methods from both the qualitative and quantitative sides of research to understand investor behavior. This design is the result of two key factors.

Statistical analysis using modern tools allows us to study the effect of behavioral biases on investing.

With qualitative methods, it is much easier to understand community behaviors and the motivations of investors, more so than with numbers alone.

3.2 Research approach.

To learn about the ways people invest, view risks and behave, survey participants were given standardized questions.

Qualitative Component: To evaluate the general atmosphere and herding behavior among investors, sentiment analysis of social media data (from Reddit and Twitter) was carried out.

Case Study: To demonstrate bias-driven behavior, certain market occurrences were utilized as case studies, such as the Terra-LUNA crash in 2022 and the Dogecoin rise in 2021.

3.3 Population and Sampling

Target Population: Retail bitcoin investors who have made at least one investment in the past 12 months and are at least 18 years old make up the target population.

Sample Size: Using convenience & snowball sampling techniques, a sample of 500 respondents was gathered from online crypto communities on Twitter, Telegram groups, and Reddit.

3.4 Data Collection Methods

3.4.1 Survey Instrument

Google Forms was used to create a structured online survey. There were four parts to it:

Age, gender, income, degree of education, and prior investment experience are all considered demographics.

Investment behavior includes trading frequency, the kinds of cryptocurrency assets owned, and the use of technical and fundamental research.

Validated Likert-scale statements (1–5) that were modified from pre-existing behavioral finance scales (e.g., Glaser et al., 2014) were used to measure behavioral biases.

Self-reported attitudes toward risk and the perceived volatility of cryptocurrency assets are used to evaluate risk perception.

3.4.2 Secondary Data

Market data: CoinMarketCap provided the historical prices, trading volumes, and volatility of the major cryptocurrencies (such as Dogecoin, Ethereum, and Bitcoin).

Social media sentiment: gathered from Reddit posts and the Twitter API using keyword filters and examined using fundamental Natural Language Processing (NLP) methods.

3.5 Variables and Operational Definitions

1. Overconfidence: Investor believes they have superior market knowledge or forecasting skill.
2. A person with this type of behavior imitates the actions of some people or groups when making investment decisions.
3. Loss Aversion: Avoiding face losses even if one's money decreases a lot.
4. Anchoring Bias: Fixation on specific price points or reference values when making investment decisions.
5. Risk Perception: Subjective evaluation of how risky cryptocurrencies are, measured on a 5-point Likert scale.
6. Irrational Decision-Making: Actions that deviate from logical financial principles, such as panic selling or FOMO buying.

3.6 Data Analysis Techniques

3.6.1 Quantitative Analysis

Demographic profiles and the frequency of bias are summarized using descriptive statistics.

Cronbach's alpha is used in reliability testing to make that Likert-scale items are internally consistent.

Relationships between personal prejudices and risk perception were investigated using correlation analysis.

The ability of biases to forecast shifts in risk perception and illogical investment choices was evaluated using multiple linear regression.

3.6.2 Qualitative Analysis

Sentiment Analysis: During significant cryptocurrency events, fundamental natural language processing (NLP) techniques were used to Twitter and Reddit messages, such as sentiment polarity as well as subjectivity rating.

Using thematic analysis, we found common emotional triggers by reviewing community-related discussions.

3.7 Ethics

Each survey respondent knew the goal of the study and agreed to take part.

No type of personal data was collected in the research process. We ensured all participant data on social media was anonymous.

The study followed the ethical rules that are usual in social science research.

3.8 Problems in Realtor Methodology

sample bias: The way many surveys are done online may not capture the total variety of investors.

Sometimes, answers in a survey are affected by social desirability or poor memory.

Because we focused on English-language posts, other opinions on this topic were not included in the analysis.

4. RESULTS

The findings from both the quantitative and qualitative arms of the study are shown here. As a result of this study, we now understand how many cryptocurrency investors have certain biases, how this impacts risk judgment and what kinds of mistakes people make in the market.

4.1 Demographics

We collected 500 replies from actively trading cryptocurrency users. Listed below are the main demographic traits:

Variable	Distribution
Gender	72% Male, 28% Female
Age	60% (25–40), 25% (18–24), 15% (41 and above)
Education	55% Bachelor's, 25% Master's, 20% High School or below
Income Level	40% <25k, 35% 25k–75k, 25% >75k
Investment Experience	65% <2 years, 25% 2–5 years, 10% >5 years

Insight: A majority of respondents are young, male retail investors with limited experience—factors that may contribute to susceptibility to behavioral biases.

4.2 Prevalence of Behavioral Biases

Based on Likert-scale responses (1–5)

Behavioral Bias	% Agreeing (Score \geq 4)	Key Findings
Overconfidence	63%	Believed they could predict prices better than others; frequently traded without research.
Herding	48%	Admitted to following influencers or majority sentiment on social media.
Loss Aversion	74%	Hesitated to sell when in loss; preferred holding to avoid realizing losses.
Anchoring	52%	Based decisions on historical high prices or entry points, ignoring current fundamentals.

4.3 Correlation Between Biases and Risk Perception

The study assessed the correlations between each behavioral bias and how risky people see cryptocurrency investing using Pearson correlation coefficients.

Bias:	Correlation with Risk Perception (r)
Overconfidence	-0.37
Herding	+0.48
Loss Aversion	+0.39
Anchoring	-0.26

Interpretation: Many investors were confident life would go well, as they thought they were in charge. Because of fear when the market drops, people who tend to avoid risky situations may perceive even greater risk.

4.4 Regression Analysis: Predicting Irrational Investment Behavior

Irrational decision-making was the dependent variable in a multivariate linear regression.

Independent Variable	Standardized Coefficient (β)	p-value
Overconfidence	+0.41	< 0.001
Herding Behavior	+0.33	< 0.01
Loss Aversion	+0.28	< 0.05
Anchoring Bias	+0.19	< 0.05

Model Summary: $R^2 = 0.58$: 58% of the variation in irrational investing behavior can be explained by the model. Overconfidence had the biggest impact, but other variables were statistically significant.

4.5 Sentiment and Social Media Analysis

Data Source: 500 Reddit posts and 10,000 tweets (April 2023–May 2024).

Key Trends:

During Bull Markets:

Positive sentiment predominates (+0.72 average polarity score).

The most common phrases were "to the moon" and "don't miss out."

Strong association between herding behavior and unexpected inflows

During Bear Markets:

A significant decline in sentiment was observed (polarity score of -0.65).

There was a lot of panic, dread, and regret.

Anchoring to past highs and loss aversion were often noted.

5. DISCUSSION

The results of this study support the expanding behavioral finance consensus that, particularly in speculative markets like cryptocurrencies, psychological considerations frequently influence investment decisions more so than logical analysis.

5.1 Interpretation of Key Results

Overconfidence

High overconfidence investors were more likely to engage in trading that was excessive and severely overestimated market hazards. This illustrates how overconfidence endures even in highly volatile, information-poor markets like cryptocurrency, which is consistent with Barber and Odean's (2001) findings in stock markets.

Herding Behavior

Particularly noticeable was social media-driven herding, which supported Banerjee's (1992) hypothesis that people frequently follow others in unpredictable situations. Our sentiment study confirmed that market movements are strongly influenced by emotionally charged group dynamics.

Loss Aversion

Decrease Aversion In line with the disposition effect outlined by Shefrin and Statman (1985), investors who were loss-averse irrationally held onto deteriorating assets. Despite systemic failure, investors held onto their investments in the Terra-LUNA crash, a sign of ingrained psychological resistance to suffering losses.

Anchoring

Many investors allowed a past milestone to influence when they should buy and sell. After the market conditions changed, several respondents continued to use old peak prices as a reason to hold onto most of their supply. The behavior observed here supports the anchoring effect described by Tversky and Kahneman in their work.

5.2 Big Implications

For Investors

To do well in investing, you need to identify these biases and avoid frequent costly errors. Focusing on these misjudgments can make educational material more helpful for retail investors.

For Markets

Biased actions in excessive amounts may create price swings or crashes, add instability to the market and make it more difficult to function effectively. It makes the cryptocurrency community less reliable and secure in the long run.

If you work in the Financial Technology and Platform sector

6. CONCLUSION

With this study, I provide a deep review of how behavioral biases influence I investor's perception of risks and choose what to invest in. Significant findings suggest that biases result in investor behaviors such as overconfidence, copying others' choices, a reluctance to accept losses and using past references when making new decisions. People act in ways that do not make sense most of the time in a financial world marked by frequent and unpredictable changes. Because social media and influences get people to have biased ideas, this can easily influence the decisions people make about investing in cryptocurrencies. The findings of these behavioral patterns support efforts to inform and educate investors, regulators and those building platforms, helping them reduce investments based on emotions.

7. RECOMMENDATIONS

7.1 For Investors

Use data to base your decisions instead of simply guessing.

Take advantage of online tests to learn about your own biases.

7.2 For Trading Platforms

Put warnings in place such as "You are trading more coins than most traders" and "Many traders are watching this coin due to social media."

Look at scenario analysis and try out different risks with risk sliders to observe potential losses.

7.3 For People Planning and Enforcing Policies

Be careful about the advice influencers share on cryptocurrencies to prevent people from misleading trends.

Support programs that aim to teach people how behavior affects their finances.

8. LIMITATIONS AND FUTURE RESEARCH

8.1 Limitations

The inclusion of only online data might during sampling means that some less tech-savvy investors might be overlooked.

A disadvantage of the survey is that individuals may report their thoughts in a way biased by their experiences.

Because of language barriers, sentiment study might fail to account for overseas investors' opinions.

8.2 Future Research Directions

Examine how investor biases may be lessened or increased by AI trading bots.

Perform long-term research to observe how prejudices change over time.

Examine behavioral trends in various regulatory contexts or cultures.

Use biometric or neuro-financial methods to examine the role of emotions such as fear, greed, and hope.

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