

A Review of the Relationship Between Investor Overconfidence, Optimism, and Market Volatility

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Abstract. Based on the theory of behavioral finance, using systematic literature review and comparative analysis methods, this study systematically integrates the connotations and mechanisms of action of two core cognitive biases: overconfidence and over-optimism. This study primarily analyzes the relationship between two types of investor cognitive biases and the respective impacts on market volatility. This study also analyzes the irrational behavior of individual investors and institutional investors under cognitive biases. This study provides an explanation of the intrinsic logic by which the interaction between the two amplifies market volatility. Based on existing literature, this study summarizes the commonalities and differences in the irrational behaviors of individual and institutional investors, points out the limitations of existing research, and provides useful reference and insights for regulating investor behavior and preventing irrational market fluctuations. Finally, looking ahead, the directions for future research include the impact of cross-market sentiment fluctuations and investors' irrational behavior in digital finance scenarios with the development of technology.

Keywords: Overconfidence, Over-optimism, Market volatility.

1. Introduction

The traditional financial theory system is based on the core premises of the efficient market hypothesis and the rational economic man assumption. When explaining the widely existing irrational phenomena in financial markets, such as asset price deviations and excessive market volatility, there are significant theoretical limitations and practical adaptation difficulties. Behavioral finance relies on the theoretical foundation of psychology, incorporates psychological mechanisms and behavioral biases into the framework of financial analysis, breaks through the rational assumptions of the traditional paradigm, to systematically explain the logical connection between investors' behavioral decision-making and the intrinsic mechanisms of market fluctuations, and provides a brand-new research perspective and analytical approach. Investors' overconfidence and over-optimism are representative cognitive biases in behavioral finance. Overconfidence and excessive optimism are specifically manifested in investors overestimating their own abilities and the correctness of their decisions during the investment process, being blindly optimistic about market conditions and underestimating potential risks. These kinds of psychological biases are not merely individual behaviors; in the financial market, they can arise from the superposition and transmission of investors' trading activities and affect asset pricing, increasing market volatility [1]. This paper studies the intrinsic relationship between investors' overconfidence, over-optimism, and market volatility. In recent years, the limitations of the efficient market hypothesis have been highlighted. The explanatory power of the efficient market hypothesis is challenged in situations such as financial crises and asset bubbles. Like the global financial crisis of 2008, the value of assets related to subprime loans is overestimated. Asset prices plummeted after the crisis broke out. The collapse of assets led to the spread of panic, evolving into a global financial crisis. Phenomena such as investor irrationality, incomplete information, and a sharp drop in asset prices contradict the views of the efficient market hypothesis. Irrational investor biases have become an important factor in explaining abnormal market fluctuations [2]. Based on this, this paper systematically combs relevant research findings and conducts an analysis, summarizes the action paths of investors' overconfidence and over-optimism

on market volatility, the relationship between heterogeneous investor biases and market volatility, and analyzes the shortcomings of existing research and future research directions.

2. A Study on the Relationship Between Investor Cognitive Biases and Market Volatility: A Review Framework

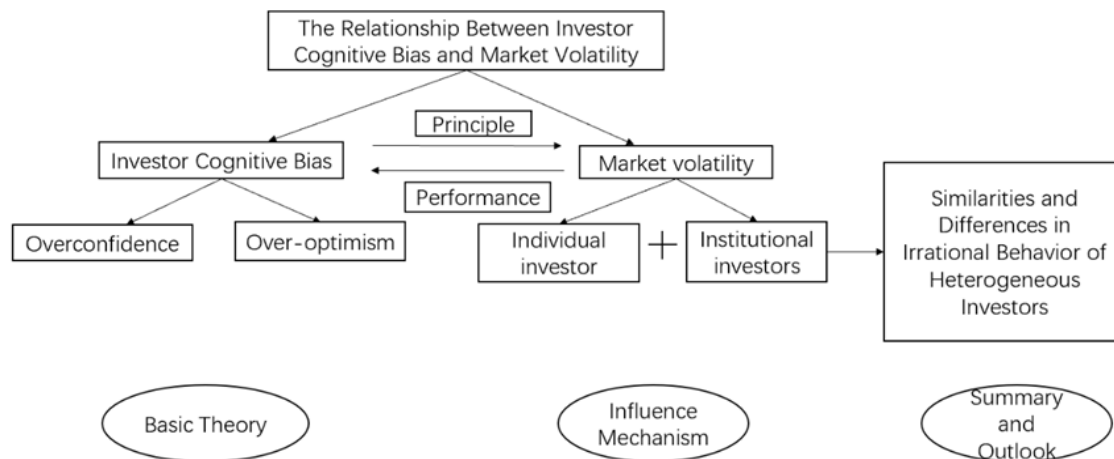


Figure 1. A review framework for the study of the relationship between investor cognitive biases and market volatility

This research framework systematically explains the intrinsic logical relationship between investor cognitive biases and market volatility. Firstly, at the level of basic theory, this paper defines two typical investor cognitive biases: overconfidence and over-optimism. These biases are regarded as a mechanism that drives investors' irrational trading decisions and intensifies market volatility. Secondly, at the level of the influence mechanism, this study analyzes from the dual perspectives of individual investors and institutional investors, revealing that cognitive biases affect market operations through irrational trading behaviors such as chasing gains and selling in a panic, and overtrading. Ultimately reflected in a significant increase in market volatility. Market volatility is the external 'manifestation' of cognitive biases. Finally, in the summary and outlook section, this study systematically summarizes the research conclusions of the entire text and looks ahead to future expandable research directions. The specific research framework is shown in Figure 1.

3. Definition of Investors' Cognitive Bias

3.1. Overconfidence

Overconfidence is a relatively typical irrational cognitive bias of investors in behavioral finance. It refers to investors overestimating their own abilities, the accuracy of their judgment and decisions, and their level of investment knowledge during the investment decision-making process. At the same time, underestimating the potential risks present in the market and the possibility of one's own decision-making errors is an irrational behavioral bias [1]. This type of bias is reflected in investors' excessive confidence in the private information they possess and their overconfidence in their own investment decision-making abilities, thereby engaging in overtrading. Investors may rationalize failure outcomes based on the cognitive dissonance mechanism. When making wrong investment decisions, they tend to refuse to acknowledge their mistakes and justify their irrational behavior. Even if the outcome of a transaction in real life is opposite to the previously expected result, investors still rationalize unfavorable results, making cognitive biases difficult to correct [3,4]. The turnover rate of China's stock market is much higher than that of foreign markets. This phenomenon is considered a manifestation of a strong speculative atmosphere. Therefore, it has become a key research area for academia and regulators. According to the statistics on annual turnover rates from the Chinese and

American stock exchanges, the turnover rate of China's stock exchanges is about five times that of mature markets such as the New York Stock Exchange [1]. In the Chinese stock market, because the proportion of retail investors is relatively high, the overconfidence of individual investors is more pronounced. The degree of overconfidence is positively correlated with the frequency of trading [5].

3.2. Over-optimism

Over-optimism refers to an irrationally positive psychological perception formed when investors in the market make unrealistically optimistic outcome expectations based on market conditions. When investors analyze and judge the trends of the financial markets and the movement trends of asset prices, they are more inclined to ignore negative information and amplify positive signals. Having overly high psychological expectations for the final returns after investment decisions. There is a tendency to overlook potential losses and the decline in market trends [6]. Typical situations of investor cognitive bias, such as over-optimism does not exist in isolation. It forms a mutually reinforcing positive correlation with market trends. Investor sentiment transmission often forms among a group of individual investors, affecting the overall trading situation of the entire financial market [7].

3.3. The Similarities and Differences Between Overconfidence and Over-optimism

3.3.1. Theoretical origin

Overconfidence and over-optimism both break the 'rational person' assumption of traditional finance theory, integrating cognitive biases from psychology to conduct analyses related to financial research. These are all typical cognitive biases in behavioral finance. It is an important theoretical basis for explaining irrational investment transactions in the financial market caused by investors' cognitive biases [7].

The overconfidence theory originated from the 'attribution bias' in psychology and was later introduced into the field of financial research. Used to explain irrational biases in investors' trading decisions [1]. Excessive optimism focuses more on investor sentiment. Focus on the guidance of investors' positive psychological expectations on the overall market expectations [8].

3.3.2. Psychological mechanism

Overconfidence and over-optimism are both cognitive biases of investors. The formation mechanisms of overconfidence and excessive optimism include insufficient information processing, such as incomplete information acquisition and incomplete information analysis. It also includes selective attention driven by emotions, such as confirmation bias, self-attribution bias, and illusion of control. It is difficult to quickly correct through objective information [9].

Overconfidence is an irrational overestimation of one's own abilities. Its core is a bias in self-perception. Situations vary from person to person, and there is a strong individuality. Over-optimism is an irrationally positive prediction of the market's future situation, easily influenced by the emotions of the group, and has characteristics of collectivity and contagion [6].

3.3.3. Market performance

All easily leads to irrational trading by investors. Increase the market's trading frequency. Increase market activity. And increase the short-term volatility of the market [10]. And it is even more evident in the trading of individual investors in A-shares.

Overconfidence is reflected in excessive trading by individuals; individual investors frequently buy and sell, with a relatively high turnover rate. Maintain a high trading frequency even when the market is stable or declining. The aggregation of individual trading behaviors amplifies the impact [3]. Excessive optimism manifests as chasing rising prices and selling falling ones, along with high-risk investments. Highly related to market conditions, more obvious in a bull market. Asset prices are easily driven away from their value through emotional contagion [9].

4. The Relationship Between Investor Bias and Market Volatility

4.1. The Mechanism of the Impact of Individual Investor Biases on Market Volatility

The overconfidence and excessive optimism of individual investors can significantly increase market volatility. Its core mechanism is manifested in the transmission of investors' cognitive biases to trading behavior. Most individual investors tend to overestimate their judgment of the stock market and underestimate market risk. Excessively relying on one's own subjective judgment while ignoring objective information and the need for professional analysis. Overconfidence may lead investors to trade frequently, chasing highs and selling lows, thereby increasing transaction costs and reducing investment returns [7]. Driven by investors' cognitive biases, individuals are prone to engaging in positive feedback trading of buying high and selling low. The actions of individual agents, when aggregated in the market, lead to further price deviations and increase market volatility. At the same time, individual investors' investment decisions are easily dominated by emotions. Optimistic expectations will further increase trading frequency and the level of investment risk-taking. An important reason for the volatility of the A-share market [6]. The investment behavior of individual investors is characterized by individuality, dispersion, and convergence. Herd effect compounded by cognitive bias. Causing short-term market fluctuations to continue increasing.

4.2. The Mechanism of Institutional Investor Bias on Market Volatility

Institutional investors also exhibit cognitive biases such as overconfidence and excessive optimism. Institutional investor bias may stem from performance pressure and the principal-agent operating model. The institution acts as an agent, conducting transactions with the client's funds. The rise and fall of stocks has nothing to do with the commissions received by agents. The risks and returns borne are asymmetric. More likely to overestimate one's own abilities and underestimate the hidden risks in the market. When under performance pressure, it is also easy to engage in excessive trading behavior. But its form of expression and transmission path are different from those of individual investors [2]. Institutions have the advantages of a larger investment scale and greater specialization. Its investors' biased behavior is more concealed. Its overconfidence bias is mainly reflected in excessive reliance on research models and market surveys. Large-scale trading by institutional investors easily leads to behavioral resonance. Concentrated portfolio adjustment under consistent psychological expectations. In the short term, it will exacerbate market volatility [6]. Different from individual investors, more professional investment decisions and arbitrage behaviors by institutions can partially hedge against irrational behavior. Has a bidirectional effect on the market: institutional behaviors may either amplify market volatility due to investors' irrational behavioral biases or stabilize market prices through value investing. In addition, non-sustained overconfidence of institutions can trigger position adjustments and be linked with the market reversal effect [10].

4.3. The Interaction of Two Types of Investor Biases

There is a significant interaction and reinforcing effect between the biased behaviors of individual investors and institutional investors. The irrational trading of individual investors provides arbitrage opportunities for institutions. Changes in institutional holdings and market signals will guide individuals to engage in follow-the-crowd actions. There is an alternating cycle of bull and bear markets in the market. In a bull market, stock prices rise, and investor sentiment is relatively optimistic; in a bear market, stock prices fall, and investor sentiment is relatively depressed. In a bull market phase, individual excessive optimism and institutional accumulation form a reinforcing loop, pushing up asset prices. During a bear market phase, individual panic selling combined with institutional portfolio adjustments and exits pushes asset prices down. At both stages, the irrational trading behaviors caused by the biases of the two types of investors jointly increased the degree of market volatility [10]. The level of overconfidence of individual investors and institutional investors does not show a significant difference under different market conditions, especially in a bull market. However, in a bear market, certain portfolios, in some cases, indicate that institutional investors may

have a greater tendency to trade than individual investors [2]. The dynamic game of cognitive biases between the two types of investors causes the impact of irrational behavior to be transmitted along the transaction chain, jointly resulting in market volatility characteristics. Research under a single investment entity makes it difficult to fully explain the reasons for market fluctuations [9].

The research results indicate that the interaction between the behavioral biases of individual investors and institutional investors further amplifies market volatility. Empirical results indicate that overconfidence is a common characteristic in China's stock market. During periods of economic expansion, overconfidence is significant. During periods of economic contraction, investors exhibit higher levels of overconfidence and volatility [9]. Individual investors compared to institutional investors. They are more overconfident and trade more frequently [2]. Therefore, for individual investors, it is necessary to be clear that they have cognitive biases of overconfidence and over-optimism in investing. It is necessary to study professional knowledge, improve awareness of investment risks, and appropriately reduce turnover rate. For institutional investors, a more specialized team, a larger scale of funds, and more comprehensive information are all advantages. However, one should not underestimate the risks present in the market because of its own advantages. Performance assessment pressure can be appropriately reduced, and excessive trading due to performance pressure can be minimized. Conduct thorough market research, leverage your own information advantages, and establish a more complete investment decision-making process. For market regulatory agencies, it is necessary to strengthen education for investors, strengthen risk awareness in cautious investing, appropriately increase the level of information disclosure in the market, improve the trading mechanism, formulate strict disciplinary measures, and maintain market stability.

5. Conclusion

Both individual investors and institutional investors exhibit significant overconfidence bias, and both affect market volatility through their trading behavior. It is one of the reasons for market inefficiency from the perspective of behavioral finance research. The difference between the two lies in the fact that individual investors exhibit more prominent biases, trade more frequently, have higher turnover rates, and are more prone to emotional behavior. The impact on market volatility is mainly characterized by short-term positive amplification and has phase differences over the long term. Institutional investors' biases are more subtle, having both market-disrupting and market-stabilizing effects.

With the development of science and technology, finance is showing characteristics of technology, digitalization, and globalization. Digital finance allows more people to understand finance. To a certain extent, it lowers the threshold for people to enter the financial market and engage in trading. At the same time, the rapid development of network information technology has accelerated the speed and scope of information dissemination. It may make investors' optimism more easily contagious in the market. As a result, this leads to an increase in irrational trading behaviors caused by investors' cognitive biases, such as overconfidence and over-optimism. Market volatility has increased.

There are still shortcomings in existing research: Current research mostly focuses on the single bias of overconfidence, with insufficient exploration of the independent and combined mechanisms of over-optimism. The study of the dynamic mechanisms of interactions among heterogeneous investors is not thorough enough. Scenario adaptation analysis is still lacking. Future research can be analyzed in combination with multi-dimensional data, using big data and machine learning methods to identify the dynamic evolution characteristics of investor biases, explore the joint influence mechanisms of overconfidence and over-optimism, and investigate investor biases in different markets and economic cycles. In-depth quantitative study of the interaction between individual and institutional behaviors. A simulation analysis framework based on Agent-Based models can be constructed to provide a more targeted theoretical basis for market regulation and investor behavior guidance.

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