Theoretical Research on the Impact of Investor Sentiment on Asset Pricing in Behavioral Finance

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Abstract. This paper examines the impact and reasons of investor sentiment on asset pricing from the perspective of behavioral finance. Traditional finance holds that investors are rational and markets are efficient, but in reality, investors are influenced by various psychological factors such as cognitive biases and mood swings, which cause asset prices to deviate from their true value. This article, through a review of the relevant literature in behavioral finance, focuses on analyzing the generation process of investor sentiment, the way it spreads, and its impact on asset pricing. The research shows that investor sentiment affects asset pricing mainly in the following ways: First, it directly influences investors' risk appetite and investment decisions, thereby causing systematic bias in asset prices. Secondly, due to the herd effect and the contagion of sentiment, market volatility is further expanded, making asset prices even more unstable. Finally, under certain arbitrage constraints, mispricing caused by sentiment can persist for a long time. This paper presents a theoretical framework of how investor sentiment affects asset pricing, analyzes the reasons why optimism leads to asset overvaluation and pessimism leads to asset undervaluation, and also discusses the role of sentiment factors in intertemporal asset pricing models. The results show that investor sentiment not only affects short-term fluctuations in asset prices, but is also an important factor in explaining long-term yield anomalies. Asset pricing models that incorporate sentiment factors can better explain market anomalies and are of great significance to investment practice and risk management. This paper enriches the theoretical framework of behavioral finance and helps to understand the complexity of financial markets and the irrational behavior of investors.

Keywords: Behavioral Finance; Investor sentiment; Asset pricing; Market anomalies; Irrational behavior.

1. Introduction

Traditional financial theory is based on the efficient market hypothesis and the rational man assumption that investors can make rational investment decisions by taking full advantage of market information and that market prices can truly reflect the value of assets. However, as the study of financial markets deepens, it has been discovered that there are many phenomena in the actual financial markets that cannot be explained by traditional financial theories, such as the mystery of equity premium, momentum effect, reversal effect, etc. This shows that investors are not entirely rational and the market is not entirely efficient, and that the psychological and behavioral biases of investors have a very significant impact on the operation of the financial market. Behavioral finance, a discipline that combines psychology, sociology and finance, offers a completely new approach to solving these problems.

Investor sentiment is one of the key aspects of behavioral finance research. It is the investor's perception of future markets and their psychological feelings about investment returns, as well as the optimistic or pessimistic state of the investor. In recent years, with the development of China's capital market and changes in the composition of investors, the influence of investor sentiment on asset prices has become increasingly important[1]. As of the end of 2023, the number of individual investors in China's securities market has exceeded 220 million, accounting for more than 99% of the total number of investors, according to the China Securities Investor Protection Fund. This indicates that China's securities market is dominated by individual investors and is therefore more susceptible to investor sentiment. This paper mainly explores how investor sentiment affects asset pricing from a theoretical perspective to better explain irrational phenomena in financial markets and enrich asset pricing theory.

2. Behavioral Finance and the Theoretical Basis of Investor Sentiment

2.1 The development context and core ideas of Behavioral finance

The development of behavioral finance began in the 1980s when scholars questioned the rational person assumption in traditional financial theory. The study of behavioral finance began in 1985 when De Bondt and Thaler discovered overreaction in the stock market through research on it. The prospect theory proposed by Kahneman and Tversky later laid a solid psychological foundation for behavioral finance, which describes how people make decisions in uncertain situations with psychological biases such as loss aversion, endowment effect, and reference point dependence. The basic idea of behavioral finance is that investors are bounded rational and make systematic mistakes in the process of obtaining information and making decisions, which are caused [2] by people's cognitive abilities and emotions. Unlike traditional financial theory, behavioral finance holds that there are arbitrage barriers and irrational investors in the market, which leads to long-term and observable mispricing.

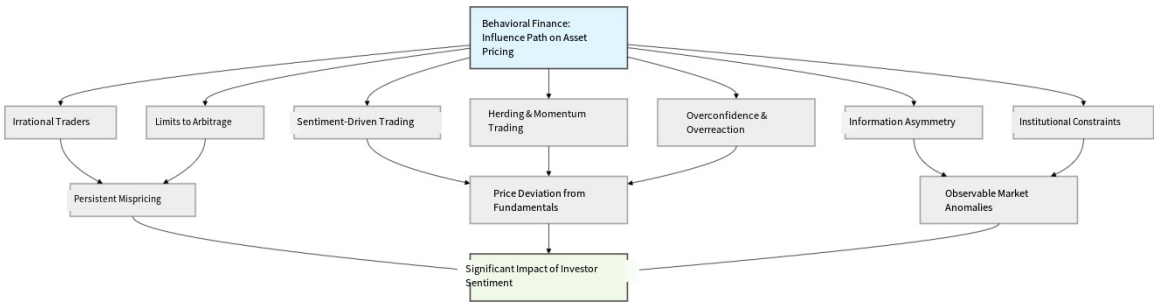

Figure 1. The Development of Behavioral Finance and the core psychological framework

2.2 Definition and Measurement of Investor sentiment

Investor sentiment is a reflection of investors' views and feelings about future market trends and risk-return, as well as the psychological state and behavioral tendencies of the investor group. In theory, investor sentiment can be divided into two major categories: optimism and pessimism. The former is when investors are overly optimistic about the future market and are willing to take more risks, while the latter is when investors are overly pessimistic about the future market and are unwilling to take more risks. There are two main ways to measure investor sentiment in the academic world: direct measurement and indirect measurement. Direct measures are obtained by means of questionnaires, research by professional institutions, etc., such as investor confidence index, institutional investor sentiment survey, etc. Indirect measures are derived by analyzing some market indicators associated with investor sentiment, such as the discount rate of closed-end funds, the number of new shares issued, the stock turnover rate, market volatility, etc. These proxy variables can well reflect the changes in investor sentiment and have good application value[3] in empirical research.

2.3 Formation mechanisms and influencing factors of Investor sentiment

Investor sentiment is a complex process that is influenced by many internal and external factors. Internally, investor sentiment is mainly determined by cognitive biases and emotional responses. Cognitive biases include representational heuristics, availability heuristics, anchoring effects, etc. These biases cause investors to be biased in the process of obtaining information. Emotional responses are different attitudes of investors towards gains and losses, concerns about uncertainty, and the need for a sense of belonging to the group, etc. External factors include macroeconomic environment, policy changes, media coverage, market trends, etc. Economic booms are often accompanied by high investor confidence, while economic downturns or financial crises tend to cause low[4] investor confidence. Media coverage and analyst predictions can also affect investor sentiment, and the role of the media is more prominent in an information asymmetry situation.

3. The Mechanism by which Investor Sentiment Affects Asset Pricing

3.1 Analysis of the Limitations of Traditional Asset Pricing Theory

Traditional asset pricing theories are represented by the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT), both of which are based on market efficiency and investor rationality. CAPM holds that the expected rate of return on an asset is only associated with systemic risk, and investors can reduce risk by holding market portfolios. However, a large number of empirical studies have found that CAPM does not explain real-world market conditions well, and many anomalies in returns cannot be explained by this model. While the arbitrage pricing theory relaxes some of its strict assumptions, it still holds that there are plenty of arbitrage opportunities in the market and rational arbitrageurs. But in reality, arbitrage is subject to all kinds of constraints, such as the cost, risk and capital of arbitrage, which prevent the theoretically existing arbitrage opportunities from being fully exploited[5]. Traditional theories ignore the psychological factors and behavioral biases of investors and fail to account for a large number of irrational phenomena in the market, which leaves room for the development of behavioral finance.

3.2 Emotion-driven asset pricing bias mechanisms

Investor sentiment affects asset prices in multiple ways, causing them to deviate from their intrinsic value. When investors are in an optimistic mood, they tend to overestimate future earnings and underestimate investment risks. This bias pushes up asset prices and creates a price bubble. Pessimism, on the contrary, leads investors to overpessimistically assess market prospects and undervalue assets, causing prices to fall excessively. Emotion-driven pricing bias has a systematic feature that most assets are affected by sentiment in similar directions over the same period. The presence of this systematic bias suggests that the sentiment factor constitutes an additional risk factor that needs to be taken[6] into account in the asset pricing model. The mechanism by which sentiment affects asset pricing is also reflected in the time-varying risk preferences of investors. Traditional theory assumes that investors' risk appetite remains stable, but behavioral finance studies have found that investors' risk appetite fluctuates significantly with changes in their emotional state. In a market environment dominated by optimism, investors' risk appetite rises and they are willing to take on higher investment risks in pursuit of higher returns. When pessimism spreads, investors become extremely risk-averse and are more inclined to hold low-risk assets. This time-varying risk preference further intensifies the volatility of asset prices, giving the risk premium the characteristic of changing in sync with the sentiment cycle.

3.3 The Noise Trader Model and the Sentiment Contagion Effect

The noise trader model is an important theoretical basis[7] for studying how investor sentiment affects asset prices. The model holds that there are two types of investors in the market: rational arbitrageurs and noise traders. Rational arbitrageurs can accurately judge the true value of assets and take advantage of arbitrage to earn risk-free profits. Noise traders, on the other hand, are influenced by emotions and biases, and their trades are random. When there is a systematic change in the mood of a noise trader, their behavior will cause the asset price to deviate from its true value. But because arbitrage is risky and costly, rational arbitrageurs cannot fully correct these biases, resulting in long-term mispricing caused by sentiment. The sentiment contagion effect reinforces the role[8] of investor sentiment in asset pricing. Emotional contagion refers to the spread of an individual's emotional state among people through observation, imitation, and social interaction. In financial markets, investors often adjust their own behavior based on the behavior of others, which makes it easy for individual emotions to become group emotions. The media, the Internet and social media have accelerated the spread of emotions, allowing local mood swings to spread rapidly across the entire market. Emotional contagion not only changes the size of emotions but also their duration, which in turn has a greater impact on asset prices.

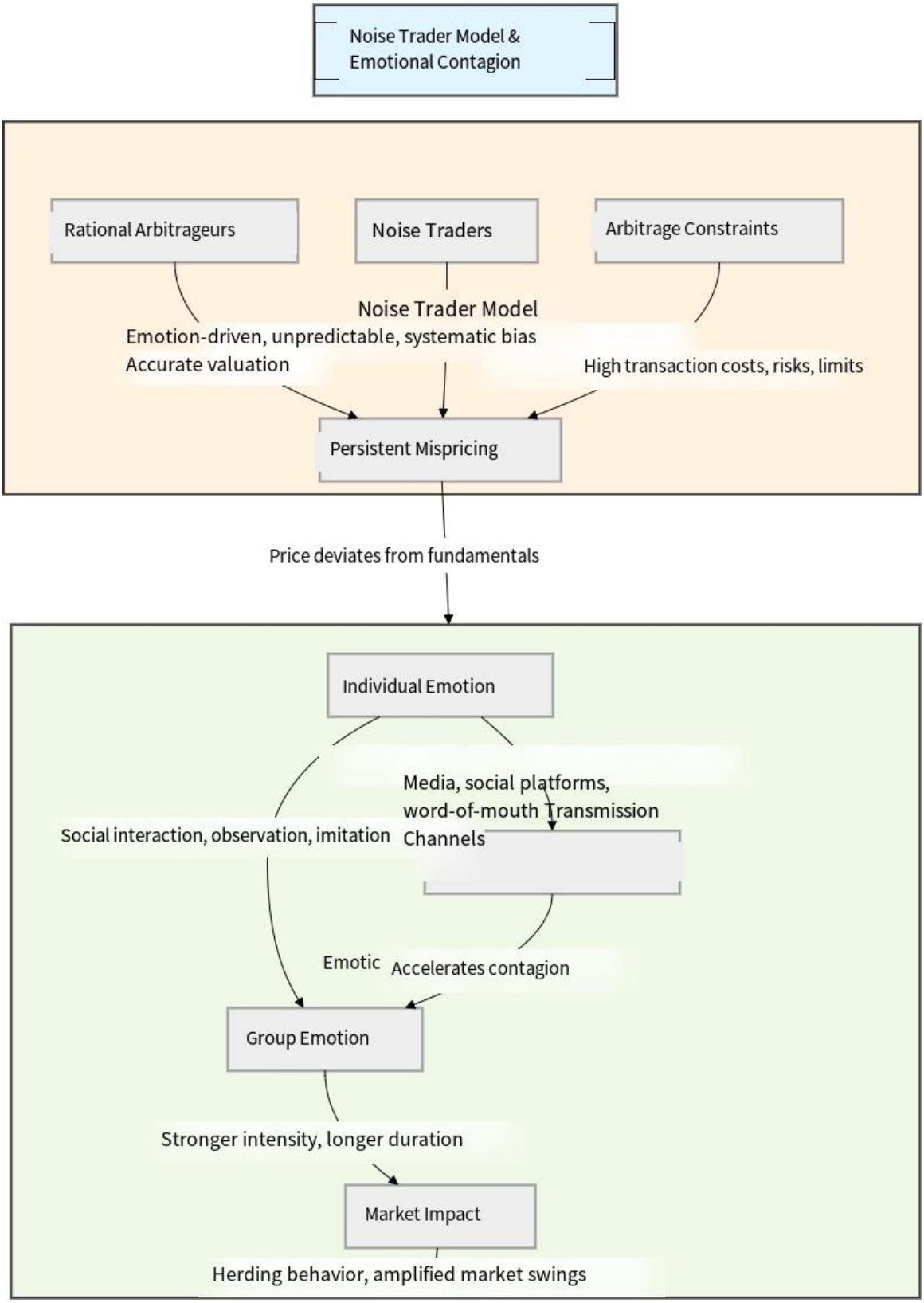

Figure 2. The Noise Trader Model and the Mechanism of emotional contagion effects

4. Empirical Performance of Investor Sentiment on Asset Pricing

4.1 Analysis of Sentiment Anomalies in the stock market

The stock market is where investor sentiment is most active, and there are often phenomena that do not conform to traditional financial theories. According to the Securities Association of China, the proportion of individual investors in the A-share market remained above 99% from 2019 to 2023, while the emotional characteristics of retail investors were[9] more pronounced. The main form of investor sentiment in the stock market is the alternating price momentum effect and reversal effect. When the market is in an optimistic mood, stock prices usually have a strong momentum, and investors tend to buy high and sell low, causing stock prices to deviate from their intrinsic value. For instance, in the technology stock rally after the pandemic in 2020, market optimism pushed the chinext index up by more than 60 percent in a short period of time, far exceeding the improvement in the fundamentals of companies. But when the market is in a state of pessimism, there will be an overreaction and subsequent price corrections. Investor sentiment also affects IPO pricing and the performance of new stocks. During periods of high sentiment, new stocks tend to rise more on their first day of trading, while during periods of low sentiment, they are prone to breaking the issue price. In addition, small-cap stocks are more susceptible to mood swings than large-cap stocks because they have a higher degree of information asymmetry, less attention from institutional investors, and the emotional trading of retail investors has a greater [10] impact on prices.

4.2 Sentiment effects in Bond Markets and derivatives Markets

Investor sentiment effects in bond markets and derivatives markets are not as strong as those in stock markets, but there are clear empirical results. In the bond market, investor sentiment is mainly reflected in the form of credit spreads. Between 2020 and 2023, the credit spread between AA-rated corporate bonds and Treasury bonds fluctuated by 150-200 basis points due to changes in market risk appetite, according to Chinabond Depository. When investor sentiment is high, tolerance for credit risk increases, credit spreads narrow, and high-yield bonds are favored. When investor sentiment is low, investors tend to "hedge", Treasury yields fall and credit bonds are sold off. The change in the term spread is also a reflection of the sentiment factor. When investor sentiment is positive, investors are more inclined to accept the term risk, the long and short spreads narrow, and when investor sentiment is negative, the yield curve flatten[11]s. In the derivatives market, implied volatility of options is an important tool for measuring investor sentiment, and the VIX fear index is a reverse proxy variable used in many countries around the world to reflect investor sentiment. Domestic 50ETF option implied volatility is also negatively correlated with investor sentiment. When market sentiment panics, implied volatility rises sharply and option prices deviate from theoretical values to a greater extent.

4.3 Differences in the impact of sentiment in different market environments

The impact of investor sentiment on asset pricing varies in different market environments. In a bull market, investors' sentiment is positive and they are willing to take more risks. The impact of sentiment on asset pricing is mainly systemic overvaluation, with prices of various risky assets rising and overall market valuations increasing. During the A-share bull market from 2019 to 2021, the price-earnings ratio of the Shanghai Composite Index rose from 12 times to 18 times, indicating that sentiment factors have A boosting effect on the overall valuation level. During the bear market, investors' sentiment was low, risk aversion increased, liquidity preference strengthened, asset prices were generally under pressure, and sentiment factors magnified the speed and extent[12] of price declines. In a volatile market, the impact of sentiment is more divisive, with different industries and different stocks responding differently to changes in sentiment. From the perspective of market participants, the higher the proportion of institutional investors, the smaller the impact of sentiment. According to 2023 statistics, the proportion of institutional investors in the A-share market is about 30%, while in the US stock market it is more than 70%, which partly explains the relatively high

volatility of the A-share market. In addition, market liquidity conditions can also affect sentiment factors. When liquidity is abundant, emotion-driven trading is more likely to deviate prices from fundamentals, while when liquidity is tight, the impact of sentiment may be limited by liquidity constraints.

5. Conclusions

This paper, from the perspective of behavioral finance, explores how investor sentiment affects asset prices and the underlying principles. The results show that investor sentiment has become a force that cannot be ignored in today's financial markets. By summarizing the relevant literature, it can be found that the impact of investor sentiment on asset prices is multi-faceted. On the one hand, it affects investors' risk appetite and investment decisions. On the other hand, it leads to increased market volatility due to herd mentality and sentiment contagion. Under certain constraints on arbitrage, mispricing can persist [13] for a long time. The traditional efficient market hypothesis fails to account for many market phenomena, while the behavioral finance theory that incorporates sentiment factors can better describe the complexity of financial markets and the irrationality of investor behavior. Empirical results also show that investor sentiment plays a significant role in the stock, bond and derivatives markets, and the differences in the impact of sentiment in different market environments reflect the different characteristics of market microstructures and participants.

The main theoretical contribution of this paper is the presentation of a relatively complete model of the impact of investor sentiment on asset prices, which expands the field of behavioral finance. From an applied perspective, understanding the mechanism of investor sentiment helps investors make more rational investment decisions and reduce losses caused by mood swings. For regulators, paying attention to changes in investor sentiment helps to identify potential risks in the market in a timely manner and take corresponding measures to ensure the smooth operation of the market. Further research could continue to explore the role of sentiment factors in different asset classes, further explore the specific pathways of sentiment transmission, and use big data and artificial intelligence methods to better measure investor sentiment. With the development of China's financial markets and changes in investor structure, the relationship between investor sentiment and asset prices will also change, which brings new opportunities for the development of behavioral finance.

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