

An Empirical Review of Behavioral Decision Making in the Financial Markets

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Abstract: Traditional economics assumes that humans make rational decisions within optimally functioning markets, but real human behavior is only partially rational. Behavioral economics has emerged to address phenomena in financial markets that traditional economics cannot explain, such as the herd effect and the small firm effect. This shift challenges assumptions in traditional finance, prompting a reevaluation of human behavior as the cornerstone of economic and financial understanding. This paper delves into behavioral economics, focusing on the loss aversion theory and its emotional impact on economic decision-making. It analyzes market anomalies, including the momentum effect and long-term reversal, revealing how investor emotions can drive market volatility and asset prices deviating from their reasonable values. The framing effect is explored, demonstrating how scenario formulation changes can alter preferences in decision-making. The paper also discusses the endowment effect in the financial market, explaining its existence and its influence on investors' decisions and the overall market. By examining these aspects, the study finds that people's overreaction to market information can behaviorally impact investment decisions, leading to market anomalies and influencing price trends. The insights provided contribute to a more nuanced understanding of behavioral economics and its implications for financial systems.

Keywords: Loss Aversion, Endowment Effect, Framing Effect, Herd Mentality

1. Introduction

Over time, traditional economics has been dominated by the efficient market hypothesis, which assumes that investors are rational (cognitively and in decision-making), that prices in the market are always correct, and that by default, the market is absolutely efficient and that resources can be optimally allocated, and that the market should be interpreted and analyzed in terms of "what it ought to be"; however, a large number of studies have shown that the results are quite different from the predictions of the market efficiency theory, which may explain some of the anomalies in financial markets. As these anomalies became more important, a new theory began to emerge - behavioral finance. Behavioral finance explains market decisions from the perspective of "what actually is", and argues that market phenomena are already regular and predictable and can be biased by irrational decisions of investors. The assumption about irrational people is the most subversive theoretical breakthrough of behavioral economics compared with traditional economics.

Behavioral finance is a combination of finance, behavior, psychology, sociology, and other disciplines cross-combined as one of the emerging disciplines, it is intended to reveal the impact of irrational human behavior on the financial market and the law. However, in recent years, behavioral economics research has made significant progress and has gone from the edge of the economics stage to the center. More and more economists to joining behavioral finance research so that people from more angles to analyze and understand the economic activities of human factors and their impact. In reality, people have the characteristic of "limited rationality", which was initially proposed by psychologists because they found that people often deviate from rational behavior in the same way, thus shaking the foundation of the traditional economics edifice of "rational man", followed by behavioral economics. Behavioral economics then challenged the foundations of the field of economics that "people are self-interested" and "people are in complete control of themselves" and introduced the concept of the "social person" [1]. Behavioral economists believe that the human brain is capable of searching for references and that this is the mode of thinking of the human brain because people cannot see everything and know everything about it, and in fact, it is impossible to do so. The innovation of behavioral economics lies in the organic combination of behavioral analysis theory and the laws of economic operation, and the study of individual decision-making habits and biases. It breaks the traditional economic theory model as well as the framework. It provides a new perspective from the practical point of view, emphasizing the importance of individual behavior and psychological factors to discover errors or omissions in the present economic model, which is a kind of correction and supplement to traditional economics. This research perspective seeks to characterize the business concepts and decision-making behaviors of different market players in different environments by analyzing the deviations and anomalies of financial market players in their market behaviors, and seeks to establish a model that can correctly reflect the operating conditions of the actual decision-making behaviors of market players.

Nowadays, there are more and more theories about behavioral economics. Through the loss aversion, market anomalies, frame effect, endowment effect, and other aspects of the study, this paper researches people's behavior, how to systematically deviate from the economics of the "rational man" assumption, and how to influence the rational man's psychological decision-making.

2. Loss Aversion

Loss aversion, proposed by American economists Kahneman and Taylor, refers to the fact that when people face the same number of gains and losses, they find the losses more intolerable. People are sensitive to pain avoidance. Relative to the tendency to profit, people are more concerned about avoiding harm. According to D. Kahneman and A. Tversky's empirical study of loss aversion, when people face the same number of losses and gains, the degree of negative emotions brought about by losses is twice the degree of positive emotions brought about by gains. This difference in subjective feelings about gains and losses can lead people to adopt conservative strategies when making decisions involving gains and risk-seeking strategies when involving losses [2]. It suggests that people hate to suffer losses and may not feel much about what they have or are about to have, while they can feel strongly about what they have lost. A panel survey of investors in a large UK bank showed that the stock market and investor portfolios frequently experience losses and gains. The results showed that loss aversion was strong for expected outcomes. Inferencing a loss aversion coefficient of about 2.2 using a reference point of zero is derived from the regression of subjective ratings on expected returns. This implies that investors react twice as much to negative expected returns as they do to positive expected returns [3]. In the stock market, stocks rise and fall in the same situation, investors make the opposite decision. They can't hold the stock when it goes up and don't want to throw it when it goes down. This reflects that people have different abilities to withstand losses and gains when faced with them. Simply put, not losing money is far more important than

making money. For floating profits, it will probably close in time to avoid losses to realize gains in advance; for floating losses, loss aversion will make us reluctant to sell the stock to the point of accepting the results of a loss, which may result in greater losses. The investor's emotion of loss can mislead other investors, affecting the financial market.

How does the loss aversion effect affect decision-making? First, the emotion of fear of loss. Investors tend to make decisions rationally and self-interestedly until the possibility of loss is involved when the idea of risk aversion comes into play because loss can be so painful that it outweighs the possible joy of gain. Thus, there is no willingness to accept this outcome when the risk of loss is encountered. If a stock is unwilling to throw away when it loses money and chooses to wait until it shows a profit, there may be a situation where the more you wait, the more you lose. Second, stubbornness. Loss aversion can make investors more stubborn. When an investor makes a decision to choose, they find that the choice may cause some loss but will tend to continue to adhere to this choice because they are afraid that their own choices are wrong and also afraid to admit that the choice is wrong, which will cause us to frustration, leading to having been insisting on the initial choice to look forward to it being correct. Third, risk aversion. When people choose, if another decision would expose us to risk, people will develop an aversion to that decision and choose another safer decision, even if that decision may bring less benefit.

Therefore, decision-making mechanisms should be set up in advance to manage decisions, counteract the irrationality associated with loss aversion, and obtain a better return on investment. Second, after making a decision, do not implement it first, but use the third-person perspective to examine whether loss aversion has exceeded rationality in the decision, and then readjust and optimize the decision to implement it.

3. Market Anomalies

According to the efficient market hypothesis, stock prices can fully and quickly reflect information in an efficient market, and the direction of stock prices is difficult to predict. Since the 1980s, many empirical studies have shown that many "market anomalies" in the market deviate from the efficient market hypothesis, among which the obvious momentum effect and reversal effect in the stock market is one of the most typical market anomalies. That is to say, in a short period of time, the trend of stock prices is obvious, but in the long run, it shows that the rising stock reverses to fall, or the falling stock reverses to rise. The momentum effect indicates a short-term positive correlation of excess stock returns, while the reversal effect indicates a long-term negative correlation of excess stock returns. Both effects are prevalent in numerous stock markets around the globe, producing a variety of anomalies. Therefore, it will explore the market anomalies caused by both.

3.1. Momentum

The momentum effect, also known as the "inertia effect", proposed by Jegadeesh and Titman, refers to the tendency of stock returns and stock prices to continue in their original direction of movement [4]. The stock market's performance is usually continuous in the short term. Over a period of time, stocks with higher yields will continue to earn higher yields in the future than stocks with lower yields in the past, and stocks with lower yields will continue their poor performance. This law is widely used in the stock market. It was formulated in 1985 by American economists Rajnish Mehra and Edward Prescott. Their study of more than a century of U.S. historical data found that the return on stocks during this period was about 7.9%, while the return on low-risk Treasury bonds during the same period was only 1.0%, a difference of 6.9%. Clearly, stock yields far exceeded Treasury yields, and the difference between stock yields and Treasury yields is known as the "equity premium" [5].

One of the psychological studies of investors is herd mentality, which refers to the tendency of people to follow what the majority does or decides. Herd mentality can easily lead to blind obedience, often leading to fraud or failure. Jedadeesh and Titman studied stocks in the U.S. stock market. They found that buying stocks that have performed well in the past while selling underperforming stocks can yield excess returns, and they further found that this phenomenon is due to the existence of stock inertia [4]. In the short term, stock prices tend to rise for some investors, and the herd mentality causes more people to "follow the herd" and buy the same stock, causing the stock to continue to rise some more. This excess is due to "inertia". This can lead to over-buying or over-selling in the market. Similarly, when the market is falling, people may sell because they see others selling, even though they may not know the specific market conditions. The upward or downward trend in the stock market triggered by herd mentality is then broken, which may exacerbate the volatility of the ups and downs or appear to be the opposite of the original trend. Momentum is not always bad, and sometimes group decisions can produce good results, but blindly following others in investment and economic decisions may increase risk and lead to market instability.

The root cause of momentum is the speed of reaction to market information. When investors do not fully reflect the information adequately, the information is gradually reflected in the stock price, which will, therefore, move in the initial direction within a short period of time, exhibiting the momentum effect. The investors can apply the momentum effect to stock market decision-making. In different stages of the stock market and in markets dominated by different types of stock investment ideas, the formation and holding periods of the momentum effect will be very different, and investors need to find the time period of the momentum effect in different environments. For speculative ideas, the future market position of ultra-short-term lobbying will be replaced by medium- and long-term swing speculation. The momentum effect in investment belongs to the right side of the trend confirmation point after the trend. The longer the momentum effect is formed and sustained, the better the returns can be achieved by utilizing the momentum effect in the environment.

3.2. Reversal

The reversal effect refers to the fact that over an extended period of time, poorly performing stocks have a strong tendency to experience considerable improvement in the subsequent period to return to normal levels (reversal to mean), while well-performing stocks tend to perform poorly in the subsequent period.

The Nobel Prize-winning economist found that stocks rise and fall regularly over the long term: "Up for a long time, down for a long time". The long-term reversal strategy capitalizes on this psychological bias of investor overreaction, where certain stocks are either overhyped or over-ignored, and this overreaction can cause the stock to be overvalued or undervalued. This strategy uses a combination of extreme mispricing at both ends, abandons the middle portion to work against investor overreaction, and expects a price recovery. The return on the reversal effect is tied to the choice of backtesting period, and survivor bias can amplify the reversal effect. There is extensive evidence for what is known as the momentum effect, which is the tendency of stocks that perform well in the previous 6-12 months to perform well in the next 6-12 months [4, 6]. At shorter intervals, researchers find reversals. Specifically, stocks that outperform over weekly or monthly intervals tend to underperform over similar durations as time progresses [7]. It is possible to construct a popular cross-sectional mean-reversion strategy from this property. It implies that among a group of stocks, those that have previously risen below average will perform better afterwards, and vice versa. This is really what a reversal is. In a nutshell, the reversal effect suggests that past losers may turn into winners in the future.

Generally, companies go through several situations. It may be in a performance phase when its stock market price is very important, as it may also be in a risky situation when its stock market price

is very low. In classical financial models, investors have been considered rational and competent. Still, when there are problems at the decision-making level, these agents resort to mental calculations, which sometimes leads to misuse of information. This phenomenon can then be explained by the behavioral biases of investors, which in turn can affect the stock market price of a company.

Both momentum and reversal effects, which various studies have shown to be related to investor underreaction and overreaction, imply an eclipsing of the efficient market hypothesis. So what should be done? The right thing to do is to be careful when buying dips, not just when they fall, but for a long time. The combination of momentum and volatility effects is a very useful technique, as research has shown that momentum returns can be enhanced by using the most volatile stocks. Another advantage of this approach is that it performs well in large-cap stocks (it is well-known that momentum performs better in small-cap stocks; therefore, any technique that works in large-cap stocks is useful).

4. Framing Effect

The framing effect refers to the fact that, in reality, people are bound to be influenced by framing when making decisions. People with the same problem view and describe the perspectives differently; the focus of expression is not the same, and a person's degree of acceptance is not the same, and thus, will make different decision-making judgments. In the face of a small probability of winning, most people are risk lovers, and in the face of a small probability of losing, most people are risk averse. The framing effect causes people to prefer alternatives with certainty over alternatives with risk (risk aversion). The opposite occurs when the same alternatives are considered potentially lossy (risk-averse). The default effect is a preference for the pre-selected alternative over other un-pre-selected given options without facilitating or incentivizing choice.

Participants were exposed to the 'Asian disease' problem [8]. Previous findings were replicated when the problem was subtly framed as a medical decision problem: participants avoided the risky option when the problem was framed positively. Still, they preferred the risky option when the problem was framed negatively. However, this reversal of preferences was eliminated when the same problem was subtly introduced as a statistical problem. The results are interpreted as evidence for the impact of context cues on the representation of decision problems [9]. When faced with gains, people will choose to avoid risk; when faced with losses, people willingly tend to risk preference. Take China's water insurance as an example. Currently, the implementation of flood insurance in China is struggling, and the proportion of purchases is extremely small [10]. The framing effect is one of the important factors. In the face of a small probability of profit, most people are risk-preferred; in the face of a small probability of loss, most people are risk-averse. And flood is a typical event of small probability and huge loss. Therefore, people resist flood insurance psychologically. The framing theory is due to people's cognitive bias; the 70% probability of profit and 30% probability of loss are the same, but the acceptance level is still not the same. Therefore, when faced with a choice, it is important to step outside of the conditional limitations and cognitive references given by the other party and carefully analyze the nature of each option and whether the result is the same or not before making a relatively correct decision.

5. Endowment Effect

The endowment effect, proposed by Nobel Prize-winning economist Richard Thaler in 1980, refers to the fact that when a person, once in possession of an item, assigns a special attachment to that item, then they will value that item higher than they would have if you didn't own it [11]. Similarly, when a person does not own an item, they are more inclined to underestimate the value of this item. They are reluctant to purchase this item at a higher price than they have estimated. The endowment effect

can be explained by the loss aversion from the previous section, where the same amount of loss brings a person much more utility than the same amount of gain. Therefore, people's trade-offs between benefits and harms in decision-making are unequal, with a much greater bias toward "avoiding harm" than toward "maximizing benefits". Because of the fear of loss, people tend to ask for higher prices when selling goods. This irrational behavior often reduces market efficiency, but this phenomenon will not be eliminated with increased trading experience. A common example of this is that retail investors often get trapped in stock trading.

General market empirical factors research analytical models and predictive findings of comparative analysis have shown that investor sentiment once overly excited high after often does produce a rapid response to improve the market's overall current stock price expectations and returns [12]. The endowment effect often causes you to make irrational judgments about the value of what you have. Because of the endowment effect, people are more afraid of losing what they have and tend to "rest on their laurels". Fear of the potential losses associated with change often makes people reluctant to change the status quo. This is also evident in life and economics, where it affects not only consumers' purchasing decisions but also firms' pricing strategies. For example, firms may overvalue their assets or brands and thus overprice their products in the market.

The endowment effect affects investment in two ways. The first is trading inertia. Owners of stocks tend to be risk-averse when stock prices fall due to a great fear of losing. The willingness to take risks to avoid losses and thus the unwillingness to abandon them when the price falls further, waiting for the price to be able to rise again, creates an anomaly: the lower the price of a stock, the lower the trading volume, which is contrary to the demand curve of traditional economics. Another reason why people are reluctant to buy stocks when the price falls for fear that the price will fall further is loss aversion, which further argues for the creation of this mentality. The second is overconfidence. When an investor buys a stock, his expectations become greater, and he tends to think that the stock price will go up, so he is more concerned and bullish about it.

Dealing with the impact of the endowment effect involves several steps. Initially, an evaluation of existing possessions should occur from an objective standpoint. Subsequently, higher emotional value may be assigned to these belongings. The key is to eliminate disruptions caused by emotional factors, minimize undue focus on current possessions, accurately assess items not yet acquired, and provide them with an objective evaluation. Lastly, fostering an open mind and steering clear of stereotyped thinking is essential.

6. Conclusion

In conclusion, this exploration challenges the conventional economic assumption of absolute market efficiency and rational decision-making, asserting that real-world individuals often deviate from rationality due to cognitive limitations and emotional influences. Behavioral economics emerges as a pivotal field capable of dissecting human behavior in financial markets, offering insights to enhance decision-making and overall outcomes by manipulating external variables.

The focus of behavioral finance on psychological factors causing investor errors and market anomalies addresses shortcomings in classical financial theory, particularly in individual behavior analysis. By scrutinizing the impact of psychological decision-making on the capital market, behavioral finance explains anomalies and complements traditional economics. This paper pioneers a research trajectory into behavioral economics through the lens of anomalies in the economic market, delineating and analyzing four effects – loss aversion, momentum, reversal, and the framing effect. Loss aversion underscores the psychological asymmetry in reacting to losses versus gains, contributing to market volatility. Market anomalies of momentum and reversal operating in the short and long term are interrelated forces influencing stock markets. The framing effect introduces the

variability in economic decisions due to framing differences. The endowment effect, overvaluing or undervaluing items, further disrupts market efficiency.

However, the study primarily engages in qualitative analyses, needing more quantitative assessments of the observed behavioral economic phenomena. Future research should bridge this gap by incorporating rigorous quantitative analyses and applying appropriate models to quantify the effects of behavioral economics on the market. While the paper delves into abnormal phenomena and behavioral biases in the securities market, the evolution of behavioral finance still needs to be completed. Integrating behavioral finance with experimental methodologies requires refinement, emphasizing the need for a robust marriage between theoretical models and experimental techniques for comprehensive development in this burgeoning field.

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