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Analysis of Herd Effect of Investor's Behavior from the Perspective of Behavioral Finance

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***Abstract*—Behavioral finance integrates multidisciplinary theories such as finance, psychology, behavioral science and sociology. From the perspective of behavioral finance, a large number of investment anomalies were analyzed effectively which in turn broadens the development space of finance. When making investment, investors will have herd behaviors with the same preference and action imitation, gradually forming herd effect. From the perspective of behavioral finance, this paper analyzed the performance and causes of individual investors' herding behavior under the premise that people are finite rationality, and put forward relevant investment strategies and suggestions to investors, which is beneficial for investors to avoid risks and to make rational financial decisions.**

Keywords—Herd effect; Herd behavior; Behavioral finance; Wealth management

I. INTRODUCTION

Behavioral finance emerged in the 1980s. It studies the cognition, emotion, attitude and other psychological characteristics of people in the process of financial investment, as well as the market inefficiency caused by it, and challenges the standard finance with the premise of efficient market hypothesis and rationality. With the development of behavioral finance, a series of behavioral models were proposed in the 1990s. For example, Shefrin and Statman proposed a behavioral capital asset pricing model (BAPM), which is an extension of the modern capital asset pricing model (CAPM) [1]. The subsequent Behavioral Portfolio Theory (BPT), developed in 2000, was put forward based on Markowitz's modern Portfolio Theory [2]. In behavioral finance, "irrational man" or "actor" is its core concept. Behavioral finance negates the basic paradigm of traditional finance, regards the subject of economic activities as "actor", and believes that the psychological factors of people play an important role in people's financial decision-making process.

In real life, herd behavior exists everywhere. Civil servants ventured into business in the 1980s and 1990s, hot pursuit of babies born in the year of Pig, Chinese Damas snatching up tons of gold products are typical examples for herd behavior. Herd behavior is more obvious in the stock investment market. Herd behavior plays a large role in market movements, and Robert J. Shiller of Yale University conducted a survey in 1987 which was involved nearly 900 investors who had lived through the great crash [3]. The results showed that about 25 percent of investors believed the plunge was caused by irrational behavior. When asked whether the main reason for the plunge was economic factors, such as corporate profits or interest rates, or psychological factors, two-thirds of investors said it was psychological rather than economic factors. The study of herd behavior is one of the important applications of behavioral finance theory. Compared with the western securities market, China's securities market is not mature, so it is easier to emerge herd effect. Therefore, it is of practical significance to study herd behavior from the perspective of behavioral finance.

Many economists and scholars at home and abroad have studied the herd effect in the stock market. They have conducted researches on the internal causes, behavioral characteristics and risk prevention of herd effect [4-6]. In recent years, some scholars have studied herd behavior from the perspective of behavioral finance. For example, Zhao Honghong and Huang Chunyan (2013) analyzed the herd effect in China's stock market from the perspective of behavioral finance. Xiao Zhu (2014) studied herd behavior from the perspective of individual investors. Based on the research at home and abroad, the herd effect in this paper will be studied from the perspective of behavioral finance.

II. THE CONCEPT AND CLASSIFICATION OF HERD EFFECT

A. The concept and connotation of herd effect

Individual decision-making behaviors are interrelated and interactive. A typical phenomenon caused by the interaction between individuals is "The Effect of Sheep Flock" or "Herd Effect", sometimes also known as bandwagon effect. This term was firstly used to describe the behavior of animals, which mainly refers to the phenomenon that sheep blindly follow the leader of sheep in the process of searching for food, water or territory. Later, through a large number of researches and practices, it was found that there was a blind following

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phenomenon similar to herding among people. Herd effect was later applied to the field of behavioral science, which was used to compare the herd behavior of people in life and describe the herd mentality of economic individuals.

As early as in 1934, the British economist John Maynard Keynes (Keynes) put forward the concept of "herd behavior" in the stock market, and he pointed out that there is some strange group extreme, or even a kind of absurd emotions that affect the behavior of the entire market along with the fluctuations of return on investment [7]. In his works General Theory of Employment, Information and Money, Keynes (1999) compared stock market decisions to attending a beauty contest. Participants were asked to choose the 6 most beautiful photos from 100 photos, and the person who was closest to the 6 photos selected by all participants was the winner. Thus, each participant chose the person he imagined the other participants would choose instead of the person he thought was the most beautiful. Keynes's beauty pageant theory reflects the fact that individual choice follows the choice of the majority of the group.

It makes sense that financial behavior uses sheep to describe the herd mentality of investors. Because of their poor eyesight, shortsightedness and lack of analysis and judgment, these individual sheep, just like the retail investors in the financial market, can only follow the action of the majority of people, and most of the retail investors will have a great chance to become followers. According to Bayes' law in statistics, the more events that support an attribute, the more likely it is to be true. That is, if a person is seen to do good all the time, that person is more likely to become a model of a good person. From a theoretical perspective, assuming that all investors have the same public information, personal information and make decisions in the face of uncertain investment results, investors will imitate the behavior of others, or judge whether the investment profit and infer whether profit in the financial market according to previous investment successful experience, so as to follow the behavior of most people to decide to invest or not.

From the perspective of wealth management, herd behavior mainly refers to the fact that investors are difficult to make accurate forecast on the market due to insufficient information. In this case, the investor's information is often observed from the behavior of the crowd, and the information will be strengthened continuously, finally resulting in a herd behavior. In the herd effect, the individual behavior may be rational, but it may lead to collective irrational behavior [8].

B. Classification of Herd Behavior

Regarding the classification of herding effect, different scholars have proposed different classification methods. It can be divided into true herd effect and false herd effect from the perspective of internal mechanism, and rational herd effect and irrational herd effect from the perspective of whether rational behavior is distinguished [7].

1) True herd behavior and pseudo-herd behavior

True herd behavior refers to the fact that participants have obvious imitation and follow of others' behaviors, while false herd refers to the fact that members of a group have the same information and take similar behaviors when facing the same decision-making problem. For example, a sudden rise in interest rates makes stocks much less attractive, and many investors choose to withdraw from the stock market. When interest rates suddenly drop and stocks become much more attractive, investors simultaneously increase the proportion of stocks in their portfolios. This change in economic behavior is not because investors change their decisions based on the behavior of others, but is generally driven by fundamental factors, so it is called pseudo-herd behavior.

The biggest difference between true herd and pseudo-herd lies in the mutual influence between individuals in the decision-making process. In the true herd effect, the fundamental reason why followers make decisions is that they often see the behavior of other investors and make rational decisions. From the perspective of behavioral finance, this kind of behavior originates from the sense of belonging of the group in the process of evolution. Or it may be the result of economic game, that is, the result of rational thinking in pursuit of maximum interests. For example, due to the consideration of information cost and the credibility of decision-making ability, small investors will adopt the policy of "following the leader" and directly imitate the trading decisions of big investors.

2) Rational herd behavior and irrational herd behavior

Rational herd effect refers to the fact that market participants consider participating in herding as the optimal strategy and actively choose to follow and imitate the behaviors of other participants based on factors such as difficulty in obtaining information, incentive factors of actors and payment externalities. Irrational herd behavior is a denial of rational herding behavior, that is, the herding behavior of participants is not from the perspective of interests at all, but just blindly imitate each other and ignore the importance of rational analysis. Its characteristic is that the behavior of the investors who take the lead in making decisions enters the market as new information, which has an important impact on the investment decisions of most of the later investors.

Both true herd behavior and pseudo-herd behavior are rational herding behavior. Because in the process of individual decision making, both of these two kinds of investors aim to maximize their own interests. The real heard individual makes rational judgments based on the information brought to them by the behaviors of other investors, while the pseudo-herd individual makes decisions in line with their own interests based on the common information in the market. Therefore, both belong to rational herding behaviors.

III. Reasons for Herd Effect

There are several explanations for herding behavior and herd effect. Philosophers think it is the limitation of human reason, psychologists attribute it to human conformity psychology, sociologists pin it on human collective unconsciousness, and economists explain herding behavior from the perspectives of incomplete information and principal-agent. Here, two reasons are discussed, namely, incomplete information and reputation and reward.

A. Herd Effect Caused by Incomplete Information

Information can reduce uncertainty, and investor' access to accurate, timely and effective information means they can obtain high profits or avoid major economic losses. However, in the real market, the acquisition of information requires the payment of economic costs. Different investors have different access to information and different capabilities. Institutional investors have the scale advantages of capital, technology and talent, and individual investors are far from comparable with institutional investors in the payment of information costs. The direct result is that institutional investors get more effective information than individual investors, and individual investors are at a disadvantage in obtaining effective information and investment returns. Individual investors, in order to seek profits and avoid risks and obtain more real economic signals, will probably look around for "stable push" of the banker or be fond of saying unwarranted information, which to a greater extent encourages the market's tendency to follow the trend.

In fact, even for institutional investors, the information is inadequate as well. In the market environment with incomplete and uncertain information, it is assumed that every investor owns the private information of a stock, which may be the result of the investor's own research or obtained through private channels. On the other hand, even if the public information related to the stock has been fully disclosed, investors still cannot be sure of the quality of the information. In such a market environment, investors cannot directly obtain other people's private information, but they are prone to herd behavior when they can infer other people's private information by observing their buying and selling behaviors. Although institutional investors are stronger in information than individual investors, they are more prone to herd behavior than individual investors because they know more about the buying and selling situation of their peers and have higher information inference ability.

B. Herd Effect Caused by Reputation and Reward

Scharfstein et al. (1993) provided the herding theory based on reputation of fund managers and analysts. Since the competence of investment managers is unknown, concerns about reputation arise. For instance, Agent 1 invests after receiving a "high income" signal. Since agent 2 is concerned about his reputation, he will follow the same investment strategy as agent 1, regardless of the signal. Because if he gets it right, his reputation will grow. If it's wrong, it means that either they're stupid or they're both smart, but they get the same wrong signal, and it doesn't do harm to their reputation. If the decision is different, the client thinks at least one person is stupid. Therefore agent 2 will always use herding strategy regardless of the signal difference between him and agent 1.
If several investment managers make investment decisions one after another, everyone will imitate the decision of the first investment manager who makes the choice. In the end, if investments are profitable, good signals will prevail. Private information will not ultimately be reflected in investment decisions, because all investment managers will follow the first investment manager to make decisions. This herding effect is therefore ineffective. And it is vulnerable because the behavior of the later investment manager is changed by a bit of information received by the first investment manager.

C. Herd Effect Caused by Speculative Mentality

The mentality state change from investment to speculation in the securities investment market is an important factor for the occurrence of herd behavior of individual investors. In the view of the original purpose of building securities financing market, the stock market can be regarded as a capital financial investment market, in which listed companies can realize direct financing in the securities market through the issuance of stock, for the enterprise provides a more wide range of financing channels. Institutions or individuals who have spare money can choose their favorite company in the securities market for investment or trading in order to get bonus, thus make the most of idle funds.

However, from the perspective of long-term practice, the vast majority of individual investors have been not only satisfied with holding shares of listed companies to share dividends and achieve their own capital appreciation, people's mentality for securities investment tends to move from the most primitive investment to speculative. More people are willing to buy low and sell high in the securities market to obtain the spread of securities transaction. Many people believe that this can increase their wealth more quickly and effectively. Although the words "investment" and "speculation" overlap with each other, they are different in essence. Speculation means that risks cannot be controlled and investors want to make high profits while investment is based on the value analysis of stocks and other financial derivative instrument. Most individual investors adopt the short-term speculation approach instead of long-term investment. In addition, stock market comments and media publicity drive the similar behavior choice of the individual investors. When the market fluctuates, investors are easily influenced by stock market comments and media information, leading to investors' blind following and the convergence of investment strategies. In this case, herd effect has become the normal state of the investment market.

IV. SUGGESTIONS FOR INVESTORS BASED ON BEHAVIORAL FINANCE

How should we deal with the failure of wealth management caused by blind herding? "You have to understand that it takes courage to go against the crowd," investor Jim Rogers said in his letter to his daughter. But the truth is, no one has ever succeeded by following the crowd. Through learning, summarizing and correcting their own behaviors, individual investors can still make use of the law of herding behavior to bring rich benefits for themselves. In the securities investment market, those who insist on their correct value investment ideas in the ever-changing securities trading market can often become the outstanding ones in the securities investment behavior [9]. Integration of these successful history of investment idea, skill, and it is not hard to find these winners without exception have wide knowledge and good at summary and research of the securities market of all kinds of behavior, can through the summary of your own or another's wrongdoing to evade his shortcomings on emotional and cognitive, overcome the blind investment behavior, so as to achieve the rational investment, allow yourself to gain success in the investment behavior. We can deal with the herding effect from the following three aspects.

1) Set clear goals for wealth management

When the goal is clear, the corresponding investment duration and liquidity requirements will be determined, so as to narrow the range of financial products. For example, funds for children's education have a relatively long investment time limit and low liquidity requirement, so they can choose high-quality funds with stable performance in the medium and long term to pursue long-term excess returns. As a substitute for demand deposits, short-term financial products or money funds are suitable for the purpose of financial management. These products have good liquidity and can also enjoy the fixed income brought by fund management.

2) Analyze financial situation and risk appetite objectively.

This may be related to the age of investors. Investors with strong risk tolerance and high income expectation can choose fund products with higher risk and higher income according to their income. The older investors with weak risk tolerance are suitable for low-risk or fixed-income fund products. If we blindly select equity fund products that have shown wealth effect without considering our own risk tolerance, we may bear a greater risk of loss. Therefore, investors should be fully aware of the risk problems in investment activities, establish a correct investment concept and risk prevention system, ensure the health of investment mentality, carefully participate in the investment system, and avoid risky speculation, so as to restrict decision-making to a certain extent. In addition, individual investors should give effective cognition to investment trading work, establish the consciousness of safeguarding their rights, and at the same time ensure that their rights will not be violated.

3) Embrace the spirit of accepting new things and pursuing innovation.

To borrow a sentence from Jack ma, "Sometimes, it is a blessing to be underappreciated, because everyone is underappreciated, and no one is killed. [10]" In terms of investment and financing, risks and opportunities coexist. Many people choose to give up the crab, because they unilaterally see the existence of risk, get rid of the risk, but also lost a lot of opportunities and benefits. A person different form the crowd, however, is not out of line or out of place. Decisive quality instead of arbitrary is needed to do a good job of wealth management.

V. CONCLUSION

Behavioral finance theory not only deeply analyzes the individual behavior of investors, but also studies the group behavior of individual investors. Herd effect refers to the phenomenon that individuals give up their own opinions, change their original attitude and adopt the behavior consistent with the majority under the pressure of social groups. People's pursuit of relative economic status is reflected in spatial comparison with others. People's mutual comparison has a great impact on individual decision-making behavior, and the pursuit of fashion and herd mentality is the most prominent performance. In the field of finance, this preference factor is often manifested as the obvious irrational herd mentality and behavior, which financial experts have begun to take as an important investment decision making factor for reference. Herd behavior is more complex, the cause of formation of behavioral finance theory, based on the communication between investors' herd mentality, investors have rumors spread, the information uncertainty, information cost is too high, the need on payment and fame, loyal to the collective, between the investors will have preference, the same action to imitate "herd behavior". To sum up, herding effect occurs due to insufficient information and incomplete, and it is difficult for individual investor to make reasonable expectations for the market, so the investors often observe the behavior of the crowd around them and extract information. In this case, the information will be roughly the same and reinforce each other, thus forming a herd mentality. Through the analysis above, it can be concluded that herd behavior is a common phenomenon in the investment market. At the same time, herd behavior is also a double-edged sword. Investors need to know, learn, summarize and use the law, so that they can use the herd effect to make reasonable and effective investment. Only by learning to think independently and make decisions, can the investors seize real opportunities and achieve investment success. One needs to think calmly and comprehensively, so as to make wise choices and lead to success.

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