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# INVESTOR IRRATIONAL SELECTION BIAS IN STOCK MARKET BASED ON COGNITIVE PSYCHOLOGY: EVIDENCE FROM HERDING BEHAVIOUR

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## Abstract

*Contrary to efficient market hypothesis, real-world investors often commit irrational behaviors, such as the herding behavior, under market friction and psychological factors. Taking China's, A-share market as an example, this paper explores how investors' selection bias affects the herding behavior, and attempts to verify if the herding behavior is resulted from the psychology of loss aversion and the extrapolative expectation (the stock price will follow the historical trend). The results show that herding behavior is commonplace in China's A-share market, especially in severe bear markets, but not frequent in gentle bull markets; the research assumption is proved valid, i.e. the herding behavior is caused by loss aversion and the extrapolative expectation. The research findings reflect the influence mechanism of cognitive psychology over investor behaviors, shedding new light on investor education and market regulation.*

**Key words:** Irrational Selection Bias, Cognitive Psychology, Herd Behaviour.

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## INTRODUCTION

Under the framework of classical financial theory, the asset price is studied based on two hypotheses about investor psychology: 1) investors have the rational belief, that is, when information is generated, investors will immediately and accurately update the expectations of the future cash flow of assets according to Bayes' rule; 2) investors make decisions based on expected utility; under established beliefs, decision makers choose action plans that maximize expected utility, and the utility function is an incremental convex function of the consumption result.

However, in recent years the research on asset pricing under the framework of behavioral finance has flourished, mainly because of the reasons below. First, asset price research under the classical financial framework is difficult to reasonably explain some phenomena in real financial market. For instance, de Bondt & Thaler (1985) show that the average high yields

obtained by some investment strategies cannot be explained by simple risk measurement. Second, the studies on behavioral finance research have made a powerful counter attack on the "arbitrage critique", which has partially removed the obstacles to the development of behavioral finance. The basic view of behavioral finance is that non-completely rational investor behavior can influence the price of financial assets, but "arbitrage critique" believe that arbitrage activities can correct mispricing and irrational investors will not have a long-term significant impact on asset prices. Shleifer & Vishny (1997) state that rational traders are subject to arbitrage risks and costs in reality, which limits their ability to correct mispricing. Third, research on "judgement and decision making" in the field of psychology made tremendous progress in the 1970s and 1980s. Kahneman & Tversky portray the way people form beliefs and make decisions. Under the framework of behavioral finance, irrational investors' cognitive bias and their selection biases can affect financial assets price, because irrational investors have incomplete rational characteristics in belief formation,

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preference and decision-making, and the arbitrage activities of rational investors are not completely effective, leading to irrational investors' trading behaviour affect asset prices.

Studies have proved that behavioral finance theory has important explanatory power for many price phenomena in capital markets, such as the herd behaviour of investors. Most of the literatures focus on the implications, formation mechanisms, and existence of herd behaviour (Spyrou, 2013). Some researchers believe that herd behaviour leads to further deviation of stock prices from fundamental values and exacerbates the volatility of financial market (Spyrou, 2013). On the contrary, certain researchers believe that herd behaviour actually drives the stock market more effectively by quickly adjusting the stock price according to new information (Hirshleifer & Teoh, 2003). Bikhchandani & Sharma (2000) constructed a model, which shows the mechanism of individual investors flocking together to buy non-optimal assets under their full rational state. Based on this, Eyster & Rabin (2010) demonstrated the intrinsic mechanism of herd behaviour in the case of individual investors' incomplete rationality using their own models. Communication within investors may lead to the internal mechanism of herd behaviour. In empirical research, there have been related literature about the existence of herd behaviour within the international market. Chiang & Zheng (2010) verified the existence of herd behaviour in multiple markets. Choi & Skiba (2015) use stock exchange data of institutional investors in 41 countries stock markets as samples, and demonstrate that institutional investors' herd behaviour is significant in these markets. Vo & Phan (2016) proved that herd behaviour exists in the Vietnamese stock market, using the daily trading data from 2005 to 2015 in the Vietnamese stock market as sample. Choi & Skiba (2015) demonstrated that the herd behaviour in stock market also exists at the level of individual stock trading. Galariotis, Rong, & Spyrou (2015) proved the existence of herd behaviour in the European bond market before and after the European crisis. Zhou & Anderson (2013) found that herd behaviour in the declining period of real estate market was stronger than that in the rising period. Jiao & Ye (2014) verified that US mutual investment fund also has a herd behaviour which has brought unstable effect to the stock market.

Recent research focuses on the existence of the herd effect in China's stock market and the factors affecting the intensity of herd behaviour. There

exists the herd effect in the individual stock market investment groups in China's stock market, while not in the institutional investors and medium-sized investors (Torre, Galeana, & Aguila-socho, 2016). The mid-term herd effect of China's stock market investment is more significant than the short-term herd effect, and the early herd effect of the one-way market is higher than the late herd effect (Snowden & Munoz, 2012). The herd behaviour in the stock market is greatly affected by the environmental factors of the external market system. Sudden events will lead to group cognitive bias. Stock market investors are more susceptible to the influence of the market banker on the stock market, further leading to the herd effect (Portnow & Hussain, 2016). Some studies have explored the application and development trend of herd behaviour in stock market investment from the four levels of internal assessment and external evaluation system of China's stock market investment, fund products themselves, small and medium investors, and China's stock market (Apostolakis, Dijk, Kraanen et al., 2018).

In the context of China's special system, it is of great significance to explain the herd behavior in the Chinese stock market from the perspective of investor beliefs and preferences. Compared with the developed stock market, China's stock market started relatively late, and the formulated regulations are not complete. The maturity, professional ability and rationality of investors are relatively low. Thus, the irrational trading behaviour of investors in the Chinese stock market is very common, esp., the speculative and herd behaviour of institutional investors and individual investors. The herd behaviour in the stock market is the tendency of individuals in the group to ignore private information or their own rational judgment and succumb to group behaviour or follow mainstream information. It has the characteristics of wide coverage and strong resonance, causing a large degree of destructive impact on the stability of Chinese stock market. Early research has shown that the surrounding environment of individual investors in the capital market, market investment climate, information asymmetry and other investment behaviours around have a certain impact on their investment decisions (Wang et al., 2014). However, these studies didn't deeply analyse the underlying psychological reasons and market regulation reasons for the herd behaviour in the Chinese stock market. Different from the existing research, this paper, based on the special institutional

background of China's largest developing stock market, aims to deeply analyse the extrapolative beliefs at the investors' belief formation stage and the possible influence of limited arbitrage on herd behaviour. Also, it empirically tests the existence and strength of investor behaviour in China's A-share market in the four different periods of sharp rise, sharp decline, slow decline and slow rise. This study provides new evidence for the existence of herd behaviour in China's A-share market, enriches the studies on the existence of herd behaviour and its causes, and deepens the understanding of the investors' psychological characteristics in the Chinese stock market. It also has also certain enlightenment meanings for the investor education and decisions.

### **INSTITUTIONAL BACKGROUND, THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS**

#### **The institutional background of China's A-share market**

Under China's special institutional background, the overall maturity of the investor group is low, which is the structural basis for the investor to form the extrapolative beliefs. The main body of investors in the Chinese stock market are still the individual investors, while the institutional investors occupies a low proportion in the market despite its rapid development. From the changes of asset scale in China's stock market, it can be clearly seen that China's fund number and share size have increased year by year, with a relatively higher growth rate. Compared with 2011, the growth rate of fund number and share size in 2018 exceeded 138.56% and 156.05%. However, institutional investors are still relatively weak in China's A-share market, and small and medium-sized investors are the main players. At the end of 2018 (2017), the number of individual investors and institutional investors who had opened A-share accounts was 14,549,660 (13,295,83) and 330,700 (338,300), respectively, and the number of non-natural persons who opened A-share accounts took up about 0.22% in the total account investors. In addition, the investment scale of investors is also relatively low. At the end of 2015, the proportions of natural person investors and the institutional investors with a market value of less than 10,000 yuan were 23.15% and 6.15% respectively; those with the market value between 10,000 and 100,000 yuan were 48.48% and 12.26% respectively; those with the market share over 10 million yuan were 0.13% and 31.51% respectively.

The imperfect arbitrage trading mechanism in China's A-share market is the institutional basis for investors' extrapolative beliefs and other irrational psychological characteristics affecting asset pricing. In China's A-share market, the arbitrage mechanism to correct market mispricing such as short-selling isn't perfect. On March 31, 2010, China's A-share market officially opened margin financing and securities lending transactions, but such transactions were not active. From 2010 to 2018, the ratio of the current balance to the A-shares market value at the end of each year was 0.07%, 0.23%, 0.50%, 1.75%, 3.26%, 2.82%, 2.40%, 2.30%, and 2.13%, respectively. And the financing balance accounts for an absolute proportion. This shows the imperfection of the arbitrage mechanism in China's A-share market. In the Chinese A-share market dominated by small and medium-sized investors, investors have limited ability to search for new information, and they do not have the same professional analysis ability as the professional institutional investors, leading to more irrational behaviour in personal investment. Investor's irrational behaviour analysis can be measured by three indicators: stock price-earnings ratio, turnover rate and volatility. Irrational investment behaviour will result in higher overall P/E ratio, increased market turnover and increased market volatility. In this market with imperfect arbitrage mechanism, it is difficult for the market itself to effectively eliminate the wrong pricing in time, indicating that the irrational trading behaviour of investors has a decisive influence on asset pricing.

#### **Psychological analysis for extrapolative beliefs, loss aversion on market herd behaviour**

In behavioral finance research, one of the most important ideas is the investors' extrapolative beliefs: when an investor evaluates the value of a future quantity, this value is considered as an increasing function of the most recent value of that quantity. The extrapolative belief is mainly reflected in the fact that investors extrapolate the future yield or fundamental information of the asset to an increasing function of the most recent return or fundamental information of the asset. To prove the extrapolative effect of investors, some literature has sought evidence from actual transaction data, such as Cassella & Gulen (2018). In addition, some other scholars have sought evidence based on survey data on investor beliefs in the real world, such as Bacchetta et al. (2009) and Greenwood & Shleifer (2014). The direct

evidence provided by these studies suggests that extrapolative beliefs exist extensively: in the stock market, the investor's overall belief in the stock market rate of return is an increasing function of the most recent stock market yield. Representative bias may be an important reason for investors to generate extrapolative beliefs. Barberis, Shleifer, & Vishny (1998) argue that the concept of representative bias proposed by Kahneman & Teversky (1972, 1973a) is the reason for the formation of extrapolative belief. According to the view of representative bias, when people answer the question of whether the specific object belongs to certain specific category according to the given data information, they may ignore the objective reference probability, and then form a belief by judging the extent of affiliation to this particular category based on the given data information. Tversky & Kahneman (1972) believes that people form false beliefs based on the law of decimals, arguing that small sample data can reflect the basic characteristics of the data model. This is another reason for the extrapolative beliefs. On the basis of the idea of extrapolative belief, with high returns generated in one investment in the past few periods, investors with representative bias will overestimate the true average yield of this asset: the realized high yield is more representative of the high-yield assets rather than medium or low-yield assets. In the stock market dominated by incompletely rational investors, most investors may adopt an extrapolation approach to form beliefs, that is, they may form the belief in future trends of the asset prices based on historical asset returns. These common beliefs will lead to the convergence of investor behaviour, which has a huge impact on asset prices and exacerbate asset price volatility. In the Chinese A-share market dominated by individual investors, the extrapolative belief has a solid foundation of existence and has an important impact on market price behaviour. Extrapolative belief-driven trading behaviours intensifies the relationship of market transactions and demonstrates the characteristics of herd behaviour. Therefore, the following basic hypotheses are proposed:

Hypothesis 1: In the Chinese A-share market dominated by individual investors, Extrapolative belief-driven herd behaviour exists stably.

The ultimate behaviour of investors is not only affected by investor beliefs, but also their actual utility function characteristics. Under the classic expected utility framework, individuals' assessment of specific gambling is shown as:

$$\sum_{i=-m}^n p_i U(W + x_i) \quad (1)$$

where,  $W$  is the individual's initial test wealth, and  $U(\bullet)$  is the increasing concave function. In contrast, according to the cumulative prospect theory proposed by Tversky & Kahneman (1992), the individual's value assessment of the gambling is given as:

$$\sum_{i=-m}^n \pi_i v(x_i) \quad (2)$$

where,  $\pi_i$  is the subjective probability function of the individual;  $v(x_i)$  is the actual utility function of the individual decision maker, in the form as follows:

$$v(x) = \begin{cases} x^a & x \geq 0 \\ -\lambda(-x)^a & x < 0 \end{cases} \quad (3)$$

Among them,  $x$  is the gain or loss obtained by the individual relative to some reference points, but not the final wealth level in the expected utility function;  $\lambda > 1$  is used to measure the degree of individual loss aversion;  $a$  is to measure the diminishing of the value sensitivity to profit and loss, usually positive value. In this value function, when  $x$  in the loss region, the function graph is a concave function; when in the profit region, it's a convex function. This indicates that the individual is more sensitive to loss, especially in the region of loss close to zero. Kahneman & Tversky (1979) inferred the individual's risk aversion attitudes by the individual evasive behaviour such as a half-probability of \$110 gain and a \$100 loss. The reason is that the individual is not concerned with the final wealth outcome, but pays more attention to potential losses and returns, and is more sensitive to equal losses than to equal returns.

According to the above characteristics of the utility function, market sentiment has a differentiated influence on the investor's trading behaviour. In the period of high market sentiment, the market is likely to rise continuously, and the investment in herd behaviour can generate potential profits; in the period of low market sentiment, the market may continue to decline, and investors may have potential losses. Kahneman & Teversky (1979) think that investors prefer risk averse when they are in a state of earning, and seek for risks in the state of loss. In

the period of high market sentiment, on the one hand, some investors will profit from the rising stock price of the market, and they may sell rather than continuously buy stocks with increased risk aversion; on the other hand, investors are not very sensitive to the potential gains from market rise. This indicates that during the market rise, investors with higher risk aversion and diminishing effect sensitivity will not actively convert extrapolative beliefs into investment behaviour, and herd behaviour may be weaker; during the market decline, on the one hand, the market decline may bring potential losses to more investors, and investors who are extremely sensitive to losses may sell stocks to avoid risks, and on the other hand, some investors in a profitable state will also sell stocks to ensure their profits earned, indicating that in the declined period of the market sentiment, the investors' highly sensitivity to losses and risk aversion may exacerbate the behaviour of investors selling assets, more highlighting the market's herd behaviour. Based on the above analysis, the following hypotheses are made:

Hypothesis 2: In the A-share Chinese market, the investor's herd behaviour is relatively weak in the period of high market sentiment.

Hypothesis 3: In the A-share Chinese market, the investor's herd behaviour is relatively significant in the period of low market sentiment.

## EMPIRICAL STUDY ON HERD BEHAVIOUR IN STOCK INVESTMENT MARKET

### Sample design

Based on the data availability and the significant impact of China's share-trading reform on the stock market, this study selected the stock transaction data from the beginning of 2005 to the end of 2018 as the initial research samples, excluding those with the daily transaction data exceeding the price limit and the existence of the missing values. A total of 7,280,858 initial samples were obtained. Then, according to the market performance, stock index changing trends and duration, the entire sample period was divided into four sub-sample intervals: sharp increase in June 6, 2005-October 16, 2007 and October 28, 2007-August 4, 2009; sharp decline from October 16, 2007 to October 28, 2008; slow decline in August 4, 2009 - June 26, 2013 and June 12, 2015-end of 2018; slow increase from June 26, 2013 to June 12, 2015. Such division facilitated an in-depth study on the strength of investor herd behaviour

and whether there exist the asymmetrical herd behaviour effects in China's stock market under different market conditions.

### Variables and model construction

Drawing on the method of Christie & Huang (1995), this paper uses the absolute deviation of cross-section (CSAD) to measure the herd behaviour. Then the cross-sectional deviation of the market trading day  $t$  is shown as:

$$CSAD = \frac{1}{N} \sum_{i=1}^N |R_{i,t} - R_{m,t}| \quad (4)$$

where:  $N$  is the number of stocks,  $R_{i,t}$  is the yield rate of stock  $i$  in trading day  $t$ ,  $R_{m,t}$  is the yield rate of stock  $m$  in trading day  $t$ , and  $R_{m,t}$  is the average of market yield.  $CSAD_{it}$  represents the absolute value of the deviation of individual stock returns from  $t$ -day market returns in the trading day  $t$ .

When the  $CSAD_{it}$  is lower, it means the smaller degree of deviation of yield rate to the average yield of the cross-section, indicating that market participants adopt a highly relevant trading strategy regardless of heterogeneous information and beliefs, and the market's herd behaviour is more significant.

Chang, Cheng, & Khorana (2000) stated that the standard asset pricing model predicts a linear positive correlation between  $CSAD_{it}$  and the absolute market yield, but during the extreme price movement, the herd behaviour around the market consensus will transform the linear relationship into a nonlinear relationship or even negative relationship. Using the method of Chang, Cheng, & Khorana (2000), the following model was applied to explore the above nonlinear relationship between the average market yield and the cross-sectional yield skewness.

$$CSAD_t = \beta_0 + \beta_1 |R_{m,t}| + \beta_2 R_{m,t}^2 + \varepsilon_t \quad (5)$$

where,  $\beta_0$  is a constant,  $\beta_1$  and  $\beta_2$  are the slope coefficients, and which  $\varepsilon_t$  is the residual term of  $t$  trading day;  $R_{m,t}^2$  reflects nonlinear relationships. If there is no herding behaviour, then in equation (5)  $\beta_1$  is positive and  $\beta_2$  equals to zero. The statistically significant negative value  $\beta_2$  implies a herd behaviour. At this time, the dispersion degree of individual stock returns is inconsistent with the expectation of the standard asset pricing model, that is, the change in market yield does not result in a corresponding degree of dispersion.

According to the estimation results of the model (5) in the whole sample and each sub-sample interval, the evidence of the investor's herd behaviour and its characteristics was obtained in the Chinese A-share market.

#### Descriptive statistical result analysis

Table 1 lists the basic statistics of  $CSAD_{it}$  and  $R_{it}$  in the overall sample and in each sub-sample. It can be seen that each  $R_{it}$  statistics of samples were listed successively in the periods of sharp-rise, slow-rise, slow-decline and sharp-decline from large to small, e.g., the average values of  $R_{it}$  were 0.42%, 0.40%, 0.07%, -0.03% and -0.36%, and the median values were 0.37%, 0.26%, 0.07%, 0.00% and -0.07%. This indicates that China's stock market makes its earnings during the up period, but has the overall loss during the down period; also, during the up period the profit increases largely but lasts short time, while in the down period, the profit rises at a small magnitude but lasts longer, that is, the characteristics of "slow loss and fast profit".

The  $CSAD_{it}$  statistics which were listed successively are in the samples of sharp-up period, sharp-down period, slow-up period, full sample and slow-down period from large to small, e.g., the mean (median) of  $CSAD_{it}$  was 1.96% (1.45%) and 1.91%(1.40%), 1.84% (1.25%), 1.69% (1.14%), and 1.57% (1.04%). This indicates that the stock yields of China's stock market vary a lot in the periods of sharp-up and sharp-down, while the stock returns in the slow rise and slow decline deviate relatively small. Therefore, there may be a herd behaviour in the whole Chinese stock market, and the investor's herd behaviour is more likely to occur in the decline period of the stock market, but not significant in the rise period.

Overall, the analysis results in Table 1 indicate that China's A-share market is characterized by a

short duration but a rapid increase in the sharp rise period, and a long duration but a slow decline in the decline period; there is widespread herd behaviour of investors in China's A-share market, which may be more pronounced during the downturn period of stock market, and be weaker during the upswing. This initially supports the hypothesis of this study, indicating that investors' extrapolative beliefs and loss aversion psychology have certain explanatory power for the herd behaviour of China's A-share market.

#### Analysis of regression results

Table 2 shows the regression results of the model (5) in the periods of the whole sample and each sub-sample, providing the information on the existence and intensity of market behaviour in the Chinese A-share market as a whole and in different market situations. The regression results of the full sample show that the slope coefficients of  $\beta_1$  and  $\beta_2$  were 0.220 and -1.633%, respectively, which indicates significant herd behaviour in the Chinese A-share market as a whole. In the sub-samples of the sharp decline period and the slow decline period, the slope coefficients of  $\beta_1$  and  $\beta_2$  were positive and negative, respectively, and both significantly. This indicates that during the declining period of Chinese A-share market, the herd behaviour is stable, especially during the sharp decline of the market. During the sharp rise period, the estimates of slope coefficient of  $\beta_1$  and  $\beta_2$  were 0.099 (significantly at 5%) and -0.002 (not significant), indicating that there is a certain herd behaviour in the period of sharp rise in China's A-share market, but not significantly. During the slow rise period, and their slope coefficient estimates were 0.011 (not significant) and 4.996 (significant at 1% level), respectively, indicating an insignificant behaviour.

**Table 1. Statistics of Variable  $CSAD_{it}$  and  $R_{it}$  in the Whole Sample and each Sub-samples**

TY	N	Var	Mean	Median	Std	Q1	Q3	Max
Full sample	7280858	$CSAD_{it}$	1.69%	1.14%	1.80%	0.52%	2.19%	19.73%
		$R_{it}$	0.07%	0.07%	3.17%	-1.46%	1.56%	10.99%
Sharp rise period	1089761	$CSAD_{it}$	1.96%	1.45%	1.85%	0.67%	2.62%	18.54%
		$R_{it}$	0.42%	0.37%	3.45%	-1.49%	2.27%	10.99%
Sharp decline period	529110	$CSAD_{it}$	1.91%	1.40%	1.84%	0.64%	2.58%	19.28%
		$R_{it}$	-0.36%	-0.07%	3.90%	-2.57%	1.91%	10.38%
Slow decline period	4707278	$CSAD_{it}$	1.57%	1.04%	1.74%	0.47%	2.00%	19.73%
		$R_{it}$	-0.03%	0.00%	3.02%	-1.40%	1.34%	10.90%
Slow rise period	954709	$CSAD_{it}$	1.84%	1.25%	1.91%	0.57%	2.38%	16.14%
		$R_{it}$	0.40%	0.26%	3.08%	-1.27%	1.77%	10.33%

Table 2. Regression Results of Model (5) in the whole Sample and each Sub-samples

Parameter	Full sample	Sharp rise period	Sharp decline period	Slow decline period	Slow rise period
$\beta_0$	0.015*** (96.93)	0.018*** (45.96)	0.017*** (34.33)	0.014*** (76.66)	0.017*** (36.44)
$\beta_1$	0.220*** (15.88)	0.099** (2.84)	0.173*** (4.85)	0.218*** (13.10)	0.011 (0.19)
$\beta_2$	-1.633*** (-8.01)	-0.002 (-0.00)	-1.711*** (-3.73)	-1.480*** (-6.20)	4.996*** (3.66)
Adj_R <sup>2</sup>	12.93	6.54%	7.21%	16.66%	16.38%
F	253.61	27.66	14.55	181.78	47.80
N	3401	762	349	1809	478

Note: \*, \*\*, \*\*\* indicate significant levels at 10%, 5% and 1%, respectively.

In summary, the regression results of model (5) show that there is significant herd behaviour in the Chinese A-share market as a whole, mainly in the market decline period, especially the sharp decline of the market, but it's not significant in the market upswing period, especially the slow rise period. According to the theory of extrapolative belief, the incompletely rational investors will extrapolate future yield characteristics based on market or asset history, especially recent yield characteristics. In the Chinese A-share market dominated by individual investors, the investor's extrapolative belief has a certain explanatory power for the herd behaviour at the overall level of the market.

As mentioned above, the risk aversion and income sensitivity diminishing psychology also have an explanatory power for the differences of herd behaviour in different market situations. In the market decline, especially the sharp decline period, investors who are more sensitive to losses may rush to sell stocks in order to avoid losses. This strengthens the influence of extrapolative beliefs on investor trading behaviour, and market herd behaviour is stronger. In the market rise period, investors with lower income sensitivity have no potential gains and are more actively buying stocks, while some profitable investors may sell stocks to avoid risks, which weakens the positive influence of investors' extrapolative beliefs on buying stocks. At this time the market's herd behaviour does not exist or is weak.

## CONCLUSIONS

According to behavioral finance theory, the cognitive, psychological, and behavioural factors of market participants are important ones affecting the operation of capital markets. In many irrational behaviours, the herd behaviour, as an important group behaviour, has an important

impact on the operation of the capital market. The Chinese stock market was established late, so it's faced with the imperfect market supervision and management system, low information transparency, individual investors-dominated market, and incomplete market arbitrage mechanism. In this special institutional background, the investor group is more likely to produce herd behaviour and have an important impact on the stock market, which has caused widespread concern in theoretical research. At present, some literature has focused on the existence of herd behaviour at the international level, the influence of herd behaviour and the factors affecting herd behaviour, but there have been a few studies on the existence of herd behaviour in China's A-share market, the realistic basis and psychological mechanism of the herd behaviour in the stock market. Different from previous studies, this paper first introduces the realistic basis of herd behaviour based on the actual China's A-share market, and perform a theoretical analysis for the realistic and psychological basis of the herd behaviour in the A-share market according to the theory of extrapolative belief, loss aversion and income value sensitivity diminishing theory. Then, taking the stock transaction data of China A-share listed companies from 2005 to 2018 as samples, it classifies them into the sub-samples of different periods according to the market's ups and downs, the rise and fall, and the duration: the sharp rise period, sharp decline period, slow decline period and slow rise period. Descriptive statistical analysis and regression analysis of each sub-samples were used to explore the existence and intensity of herd behaviour in different market situations. The study found that: (1) there is a significant herd behaviour in China's A-share market as a whole; (2) in the market downturn, especially the sharp decline period of the market,

the herd behaviour in China's A-share market is the most prominent; (3) In the market upswing, especially the slow rise period, the herd behaviour in China's A-share market is not obvious or even non-existent.

The research findings show that under China's special institutional background, the extrapolative belief of the investor group dominated by individual investors has a certain explanatory power to the herd behaviour, while the investor's loss aversion and risk aversion preference characteristics exacerbate the impact of the extrapolative effect on the trading behaviour of investors, causing a more pronounced market behaviour in the market during the period of high market sentiment. Investor value diminishing preferences and risk aversion preferences weaken the impact of extrapolative beliefs on trading behaviours, leading to a weaker market behaviour in investor sentiment. This study deepens the understanding of the rational characteristics of investors in China's A-share market, enriches behavioral finance research, and has certain reference significance for investor education and stock market regulation.

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