A STUDY OF HERD BEHAVIOR BASED ON THE CHINESE STOCK MARKET

Yu Zhang, Researcher
UTS-SHU SILC Business School
Shanghai University, China

Xiaosong Zheng, PhD, Associate Professor
Tallinn School of Economics and Business Administration
Tallinn University of Technology, Estonia

Introduction
The continuous development of financial market contributes to an increasingly interest in the inherent law of the behavior of security investors. The main purpose of the paper is to investigate the level of herd behavior among Chinese security investors through the LSV model. Claessens and Kose (2013) define herd behavior as the tendency of investors to imitate other market participants’ actions instead of considering their own private information. In terms of imitation, Thorndike (1898) describes it as the behavior of assimilation something only by observing it. Christie and Huang (1995) point out that individual often consider the collective actions of market although they have adverse forecasts. Moreover, herd behavior is also defined by Devenow and Welch (1996) as behavior models relating to the instincts of individuals. Prechter (2001) argues that herd behavior represents the irrational psychology of investors. Sornette and Johansen (1997) point out that the hypothesis of efficient market will be recovered and in the circumstances, investors will know in what way to interpret the meaning of collective information. Later, Demirer and Kutan (2006) explore such cross-section data as an impact of information transparency of stock exchanges on the shape of herd behavior. Excessive volatility of the market can be explained by herd behavior to some extent, which triggers the prices deviation from intrinsic values (Loan, 2015).

Theoretical Solutions
Bank run, market liquidity and access to information are three main phenomena in external payment model. Diamond and Dybvig (1983) argues that the self-fulfillment requirements of economic agents lead to the inefficient equilibrium which completely unpredictable, thus, resulting in the bank run. Goldstein (1986) extends the model of Diamond and Dybvig (1983) and establishes the information cause model, finding that the possibility of bank run is proportional to the opportunity cost of depositors. Jacklin and Bhattacharya (1988) establish bank advanced reverse investment model and point out that bank run is caused by the adverse information of risk assets income. Gorton (1988) raises an objection on the statement of bank run is unpredictable. Prechter (2001) reviewed several bank run in American history and argues that bank run will end up by the government intervention or new release of private information.

The herd behavior of information acquisition would happened, if the subject studied the information which is considered to be researched by other subject in advance and expect that other subject trading assets in the desired direction. Brennan (1990), Froot et al. (1992), Devenow and Welch (1996), and Hirshleifer et al. (2003)
all studied this issue and found that, when the subject studies the information, which is
to be studied by other researchers, the research value is proportional to the number of
the information research subject.

Scharfstein and Stein (1990) proposed the reputation theory and Graham (1999)
developed the theory and established the reputation model of herd behavior. The basic
idea of which is that if an investor is not sure about the investment decisions, then the
wise behavior is to be consistent with investment experts, and herd behavior is
generated when other experts think the same. At the same time, imitation by managers
is not only related to reputation, but also related to the problem of compensation. In the
stock market, manager’s compensation is based on personal performance compared
with other managers. The investment manager will get extra payment, in case the fund
performance is better than peers, and otherwise he will be punished. Therefore, the
managers will tend to adopt imitation with other experts if he or she is risk aversion.

Methodology

Lakonishok et al. (1992) uses the proportion of investors in a single market to
study whether the herd behavior exists among fund managers of duty free stocks in the
United States and examines using the classification of the size of the stock equity,
historical performance and the scale of fund assets. This method is called the LSV
method by Lakonishok.

Lakonishok et al. (1992) defines the measurement of herd behaviour degree is
HM i,t , and the calculation of HM is as equation (1).

\[
HM_{i,t} = |P_{i,t} - E(P_{i,t})| - AF
\]  

(1)

where P i,t represents proportion of the fund buying stock i account for all funds
that buying and selling stocks in season t, E(pi,t ) represents the expected proportion
of the fund buying stock “i” accounts for all funds that buying and selling stocks in
season “t”. AF is an adjusting factor, which is the expected value of |pi,t – E (pi,t)|
under null hypothesis condition.

As for the herd behavior degree for all the funds in stock market, then the
arithmetic average of all the stocks and quarters is calculated through the equation (2).
The higher the average of HM, the more obvious is herd behavior.

\[
\bar{HM} = \frac{\sum_{i=1}^{N} \sum_{t=1}^{M} HM_{i,t}}{N + M}
\]  

(2)

LSV model is used as the most classic and widely used method in testing herd
behaviour among institutional investors. This paper uses LSV model to examine
whether or not herd behaviour exists in security market of China in 2014.

Table 1. The Corresponding Relation Table of HM Value
and the Degree of Herd Behavior

<table>
<thead>
<tr>
<th>The value of HM</th>
<th>0-10%</th>
<th>10%-20%</th>
<th>20%-50%</th>
<th>50%-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>The degree of herd behavior</td>
<td>Not obvious</td>
<td>slightly</td>
<td>serious</td>
<td>very serious</td>
</tr>
</tbody>
</table>

VOLUME 5 NUMBER 2 SPRING 2016
The paper collects the top 10 stocks’ data of domestic fund from the first to the fourth quarter of 2014. As this paper selects the data of 161 funds, AF is very close to zero. Therefore this article makes the AF = 0 and then calculates the HM of every stock according to LSV model.

 Inspection by calculation, the HM value of China's security investment fund in 2014 is represented in the Table 2.

Table 2. The Empirical Results of Security Investment Fund in China in 2014

<table>
<thead>
<tr>
<th></th>
<th>The second quarter compared with the first quarter</th>
<th>The third quarter compared with the second quarter</th>
<th>The forth quarter compared with the third quarter</th>
<th>The average value of the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM</td>
<td>0.30012</td>
<td>0.31122</td>
<td>0.29477</td>
<td>0.30204</td>
</tr>
</tbody>
</table>

As seen in the Table 2, all the values of HM are in the interval of 20%-50% (see Tab. 1), which indicate that the phenomenon of herd behavior in China is serious. The average value of the year is 0.30204, which means that if 100 funds trading the same stock, extra 30 of them (buyer or seller) exists in single market.

From the perspective of macro-environment of stock market in China, it currently still at an early stage of development and the irrational behavior of investors contribute to the great fluctuation. Long-term machine of non-tradable shares on the stock market in China impose important influence to the information transmission, resulting in imperfect Information transfer. The information disclosure of Chinese stock market suffers from the lack of timeliness, accuracy, and is full of insider trading, which causes serious information asymmetry and herd behavior.

In terms of the number of opening an account, 72 million individual investors have opened an account by 2014, which is much higher than that of institutional investors. In addition, the investment funds and trading volume of individual investors are also larger compared with institutional investors. However, the proportion of shares held by institutional investors are greater than that of individual ones in the world’s major developed security market, which means that the trading of Chinese security market gives priority to individual investors and could be influenced dramatically by individual investment behavior. Furthermore, the turnover rate of stock trading is relatively high in the Chinese security market, suggesting that investors, regardless of institutional or individual ones, are prone to engage in the short-term investment to speculate, which adds to the investors' irrational investment and prevalence of herd behavior.

**Conclusions**

The widely used LSV model enables us to examine the level of herd behavior among Chinese investors. The obtained results show that obvious herd behavior exists in Chinese security market. A series of analysis were taken both for the behavior of individuals and institutional investors. The prevalence of herd behavior is based on the theory of external payment, reputation, incomplete information and group psychology according to some research papers. As herd behavior involves multiple investment subjects, it has a significant influence on the stability and efficiency of the security market, as well as has a close relationship with financial crisis. Behavioral finance is an
interdiscipline of finance and psychology, the meaning of which lies in ensuring the role of psychological factors of market participants in decision making, denying the traditional financial theory and being more in line with the actual situation on financial markets. Investors, including institutional and individual ones, can achieve investment objectives based on the strategy in view of the irrational behavior.

References


---

**A STUDY OF HERD BEHAVIOR BASED ON THE CHINESE STOCK MARKET**

Yu Zhang  
Shanghai University, China  
Xiaosong Zheng  
Tallinn University of Technology, Estonia

**Abstract**

Traditional finance theory is based on Efficient Market Hypothesis, while irrational behavior is examined to exist in security market. Behavioral Finance is introduced and developed to explain market anomalies, which incorporates psychology, sociology and other subjects of research methods into the study of investment behavior to explain how investors handle the information and take actions. Herd behavior of investors is a special irrational behavior and an important research of behavioral finance. Investors with herd behavior will be influenced by others easily and over-reliance on public opinion instead of own information and situation when making investment decisions. As herd behavior will have a large influence on stability and efficiency of financial market and even results in financial crisis, government and academia pay extensive attention to the study of herd behavior and produce some theories to examine it, such as LSV model, PCM model, CAPM model, CH model and CCK model. Among them, LSV model, as a classic method, is used most frequently to examine institutional investors. This paper states relative definition of herd effect, reviews theoretical models and uses LSV model as the methodology to examine the herd behavior of Chinese institutional investors in 2014. The results show that obvious herd behavior exists in Chinese security market.

**Keywords**: herd behavior, behavioral finance, market efficiency, LSV model