A Study on Herd Behavior in Mergers and Acquisitions of Listed Companies

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Keywords: herding behavior, Cluster analysis, Optimal segmentation method, M & A

Abstract: Merger and reorganization of companies is one of the important ways to allocate resources in the capital market, but it cannot be considered that all mergers and acquisitions are made by decision makers out of reason.This paper selects listed companies that were merged from November 2018 to mid-October 2019 as observation samples, and uses the ordered sample cluster analysis of MATLAB to obtain that in the division of merger events in the industries that are the subject of merger, the three industries of medicine and health, media and real estate show very obvious concentration of time and space.This activity conforms to the descriptive definition of herding behavior.

1. Introduction

With the rapid development of China's economy and the further deepening of the reform in the economic field, there has been a wave of mergers and acquisitions in China's listed companies.Merger and acquisition is an important means of industrial integration, adjustment of product structure and acceleration of the transformation of economic growth mode. From this perspective, merger and acquisition events should tend to grow and be taken seriously by corporate decision makers.Rational M&A decisions can improve the corporate governance structure, improve the level of corporate governance, help companies expand and gain scale effects, and can quickly enter another market according to the different objects of M&A.

Since the reform of non-tradable shares, China has made a series of progress in the operation of capital market and the legal system environment of macro-financial asset structure.The further deepening of the market-oriented reform has promoted the market position of listed companies, stimulated the flow of capital in the capital market, and encouraged the flow of capital to macroeconomic booming industries and numerous investment hot spots.The number of mergers and acquisitions and the amount of transactions are increasing year by year in our country. According to the division of the target industries of mergers and acquisitions, it is found that a lot of mergers and acquisitions are concentrated in certain specific industries, and then a large amount of financial resources are concentrated in certain specific industries. Is there herding behavior in this phenomenon, is it consistent with the descriptive definition of herding behavior, and can data be found to support it?The research object of this article is the merger and acquisition events that occurred in several specific industries with a large amount of resources flowing in the past year. Cluster analysis is carried out to test whether there is temporal or spatial agglomeration in China's merger and acquisition market from the perspective of data.

2. The Mechanism Analysis of Herding Behavior in Mergers and Acquisitions

Herd behavior refers to the phenomenon that animals move in groups and look for food.When this phenomenon is used as a description to describe the situation in human society, it mainly refers to that the individuals in the group are consistent with the actions of others in terms of results.Introducing into the investment field means that investors imitate each other.Decision makers in the process of mergers and acquisitions sometimes ignore the information they have, but choose to

obey the public to make decisions.In recent years, financial economists have conducted continuous research on herding behavior.

This paper holds that herding behavior shows that in a certain period of time, from the perspective of results, a large number of decision makers adopt the same or similar strategies, for example, they have the same preference for specific merger and acquisition targets belonging to one category.Policymakers tend to imitate and follow the behavior choices of most other people in the market while ignoring the specific problems of the company that are different from others when solving their own practical problems.The reasons for herding behavior in mergers and acquisitions of listed companies in China can be divided into the following aspects:

2.1 Short-sighted Behavior of Listed Companies

Time preference refers to people's preference for things that can be paid immediately for their investments.Many studies show that people's preference for short-term interests is better than long-term interests.This also means that in merger and acquisition activities, people sometimes only want to obtain short-term benefits, regardless of whether it is in line with the company's long-term strategy.For the current hot industry, blindly following the trend of mergers and acquisitions makes the performance improve instantly after mergers and acquisitions, but then return to the past or even decline, the reason is that the decision makers prefer short-term behavior, which also caused serious herding effect.

2.2 Over-reaction and Under-reaction

Over-reaction and under-reaction mainly refer to the two different manifestations of decision makers affected by the news related to mergers and acquisitions.The performance of decision makers will affect the heat of other decision makers and targets of mergers and acquisitions, thus promoting the further development of mergers and acquisitions.Overreaction refers to the decision-makers who have given much consideration to the recently hot merged parties and blindly followed the recent trends and trends.Investors ignore personal information and adopt an act of "following the trend".Over-reaction will enlarge the effect of some mergers and acquisitions indefinitely, aggravating the blindness of mergers and acquisitions, while under-reaction will make the market lack information or response to mergers and acquisitions that would otherwise be good opportunities, resulting in missed opportunities for enterprises and finally affecting merger and acquisition decisions.

2.3 Information Asymmetry and Limited Rationality

Asymmetric information obtained by enterprises is an important reason for herding behavior of listed companies in mergers and acquisitions.Due to the cost of obtaining information and other factors, the acquirer cannot obtain complete and sufficient information, so the judgment of the target enterprise will produce a certain degree of error judgment.At this time, considering this possibility, imitating other decision makers becomes the best choice for choosing mergers and acquisitions.More and more companies take part in mergers and acquisitions first, which will have a huge impact and drive later companies to join in the trend of mergers and acquisitions. As a result, mergers and acquisitions follow the trend of behavior, resulting in more herding behavior in the mergers and acquisitions market.The information in China's stock market is still asymmetric, and the regulatory system of the market is not comprehensive enough and there is no sufficient and reliable information. Investors tend to choose the same investment strategy.

At the same time, it must be considered that due to the problems of professional level and experience and technology, there is a positive correlation between professional experiences and herding behavior.Every decision-making is not completely rational. From the perspective of cognitive deviation, there are a series of complicated situations such as overconfidence, herd mentality and loss aversion, all of which are irrational.The decision-making process deviates from the way to maximize the value of the enterprise, thus aggravating herding behavior.

3. Data Source and Sample Description

The data sources used in this study are mainly from the flush financial database.

In the case of merger and acquisition selected in this article, both parties involved in the merger and acquisition have transferred their controlling rights.It is emphasized that the reason for the transfer of control rights is the continuous growth of corporate mergers and acquisitions, among which the cases of transfer of control rights caused by mergers and acquisitions do not occupy the majority in relative proportion.However, if the merger does not result in the transfer of control rights, it will not have a great impact on the corporate performance of the merging party.In order to further study the performance change of the acquirer after the enterprise participates in the merger, the sample selected in this paper is a case of controlling share transfer of the acquire.

The M&A events selected in this paper are all in the state of completion. Whether the transaction progress is completed or not marks the end of the enterprise merger, and only the completion of the M&A events will have a more practical impact on the enterprise performance.Therefore, the samples selected in this paper are M&A events whose transaction progress is in the completion state.

The targets of the mergers and acquisitions involved in this article are all non-listed companies.Because of all mergers and acquisitions, listed companies are the target of only a handful of mergers and acquisitions, so we will ignore them.

The M&A events involved in this article all refer to domestic M&A, that is, both the transaction buyer and the subject matter seller are domestic companies.

The research object of this article is the M&A events from November 2018 to October 2019.Through the data retrieval of flush database.The analysis software used is MATLAB, and the table analysis software used is EXCEL.

4. Research Design and Empirical Analysis

4.1 Herd Behavior Agglomeration in Space

According to the flush database, 986 mergers and acquisitions occurred in 28 industries from November 2018 to October 2019. According to the statistics of the industries where the subject matter sellers with more mergers and acquisitions occurred, the statistics are as shown in table 4-1.A total of 665 mergers and acquisitions occurred in 10 industries, accounting for 67.44% of all mergers and acquisitions.

Table 1 Statistics of Subject Matter Sellers in Merger and Acquisition Transactions

Industry	Chemical	Media	Real Estate	Public Service	Mechanical Equipment
Number of M&A	99	71	63	63	73
Industry	Computer	Architectural Decoration	Electronics	Medical Biology	Electrical Equipment
Number of M&A	78	46	54	68	49

4.2 Herd Behavior Aggregation in Time

In order to measure the concentration degree of M&A events in each industry, this paper designs a concentration degree composite index, which consists of industry concentration degree index: the number of M&A events in a certain industry in a specific period of time/the number of all M&A events in the industry in a year;Time concentration index: the time length of a year (12 months)/the length of a specific period of time (months) is obtained by multiplying the two indexes.The higher the comprehensive index is, the more concentrated the number of M&A events in the industry or the shorter the time it takes to occur, i.e. the more concentrated the M&A events in the industry, the degree of concentration conforms to the descriptive definition of herding behavior. It can be considered that herding behavior specifically occurred in this period of time from the perspective of big data.

This paper finds three industries with obvious herding behavior, all of which have existed for a certain period of time with a composite index higher than 4.They are cultural media, construction

real estate and medical and health industries.Therefore, these three industries can be judged to show obvious agglomeration, and they are named as herding industries with concentrated M&A targets.

Table 2 Statistics on Herd Behavior Concentration of M&A Events in Various Industries

Industry name	Period of time	Number of M&A	Duration (Months)	Composite index
Media	November 2018	2	1	0.338
	December 2018-July 2019	41	8	0.866
	August 2019	24	1	4.056
	September 2019-October 2019	4	2	0.338
Real estate	November 2018-February 2019	8	4	0.381
	March 2019	10	1	1.905
	April 2019	22	1	4.190
	May 2019-October 2019	23	6	0.730
Medical and health	November 2018-March 2019	14	5	0.494
	April 2019	24	1	4.240
	May 2019-October 2019	30	6	0.882

Cluster analysis of ordered samples by MATLAB means that the ordered samples are segmented according to the optimal segmentation method, so that the difference between each segment is the smallest, while the difference between each segment is the largest.First of all, for the media industry, it is more appropriate to divide the data in one year into four categories. Through calculation, it can be seen that the period of concentration of herding behavior in the media industry is August 2019.However, the merger and acquisition of the real estate industry also shows that herding occurs in April 2019 under the optimal segmentation method.Similarly, the medical and health industry obtains from the composite index that April 2019 is the period of concentrated herding behavior.

5. Interpretation of Result

5.1 Herd Behavior Becomes the Reason for Active Mergers and Acquisitions in Media Industry

The cultural media industry has shown strong vitality in the process of economic transition and slow decline, and it is now the policy opportunity period for the cultural industry.The state has tried its best to promote the development and growth of the media industry. Under this historical opportunity, the process of mergers and acquisitions in the media industry has also gradually accelerated, especially for central enterprises. At the same time, some powerful private enterprises and private capital have poured into the industry.Through the specific observation of mergers and acquisitions in the media industry, we can find that in the specific cases of mergers and acquisitions in the media industry, the middle and lower reaches of the enterprises have begun to take the initiative to enter the upstream production chain to provide price competitiveness and control for their original industries. The adjustment of the industrial structure makes some traditional film and television enterprises continuously carry out new challenges and integrate upstream high-quality resources.The new changes in the market policy environment have made the development of the media industry segment in full swing, with various investment booms pouring in. previously marginalized small segments such as film and television, animation, and the internet have been recognized by the mainstream market.

5.2 Herding Behavior Becomes the Reason for Active Merger and Acquisition in Real Estate Industry

Due to its high risks, high profits and high land transfer fees, the real estate industry's demand for capital is expanding day by day.High profits and high land transfer fees make the real estate industry's demand for funds increasingly expanding, so large companies with abundant funds and extensive financing channels will have sufficient motivation for mergers and acquisitions of small and medium-sized real estate enterprises with insufficient funds and poor management.At the same

time, high profits also enhance the competitiveness of the original enterprises.From the analysis of the current situation, the real estate market in our country has developed rapidly after the market-oriented reform of the real estate. The turnover has risen sharply and the transaction price is also in a rising state. However, it has to be mentioned that the real estate price has broken away from the fundamental support and entered the irrational bubble development stage.

Diversification of enterprises has become an inevitable choice for many enterprises to develop to a certain scale, but risks in different industries are different.Good and reasonable merger and acquisition of enterprises can provide a new combination of assets for enterprises to reference, reduce the risks of enterprise operation and development, and participate in the distribution of other high profit industries.This also explains why many large non-real estate companies will distribute in the real estate industry to realize profits and spread risks by seeking new business growth points.From the perspective of enterprise integration, the increase of enterprise scale, more competitive compared with competitors, extension of enterprise value chain, realization of enterprise extension to high profit areas, thus obtaining various resource benefits.

5.3 Herd Behavior Becomes the Reason for Active Mergers and Acquisitions in Medical and Health Industry

Although the overall situation of the global economy is unsatisfactory and the unemployment rate remains high, the medical and health market has maintained a steady growth trend and the profit level of the global medical and health industry is very high.With the growth of the total population and the aging of the society, people's demand for health care and medical care is increasing, and the medical and health market is expanding rapidly.If we are to predict the development trend of the pharmaceutical industry in the next few years, we have to take into account the basic macro factors. They are: the competition in the field of generic drugs has turned white-hot;Biological pharmaceutical technology is becoming more and more perfect, and gene technology has made a major breakthrough.With the improvement of people's living standards and more and more attention to health management, people have more and more trust in health care products.At the same time, the aging of the population, the increasingly strict pharmaceutical regulatory environment and the need for further improvement in research and development efficiency have prompted the pharmaceutical industry to carry out large-scale mergers and acquisitions.

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