A STUDY ON THE IMPACT OF HORIZONTAL MERGERS AND ACQUISITIONS ON THE PERFORMANCE OF LISTED REAL ESTATE DEVELOPERS BASED ON PANEL DATA FROM CHINA

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by
Jian Hu.Graduate
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Thesis Approvals:

Dr. Lalitha Naveen, Advisory Chair, Department of Finance
Dr. Connie Mao, Thesis Advisor, Department of Finance
Dr. Gurdip Bakshi, Thesis Advisor, Department of Finance
Dr. Wei Wang, External Member, Affiliation

ABSTRACT

Merger &Acquisition is a way to allocate resources in the capital market, and also a way for enterprises to expand scale. Since the real estate industry has a prominent position in the national economy, and M&A events in the real estate industry are also increasing year by year, it is worth studying whether M&A can improve the performance of M&A enterprises. From the perspective of horizontal M&A of real estate enterprises, this paper studies whether the short-term and long-term performance of listed real estate enterprises can be improved under horizontal M&A.

First, this paper studies the background of M&A, the performance of M&A and the motivation of M&A relate to the theory and analyzes development of the real estate industry in recent years. After that, this paper begins to conduct an empirical study on the short-term performance and the long-term performance of horizontal M&A of listed real estate enterprises. This paper selects the horizontal M&A of real estate enterprises occurred in 2016 as the research samples. The short-term research calculates the CAR of each day of the event window by using the method of event studying, and compares its change. The long-term research uses the method of factors studying to calculate the comprehensive performance score of each year before and after M&A.

The research result of this paper shows that although horizontal M&A of real estate companies brings positive cumulative abnormal return in the short term, the CAR is very small. In the long term, the comprehensive performance scores of horizontal M&A of real estate companies decline and then rise slowly before and after M&A.

Besides, in this paper, starting from the features of the real estate industry, I analysis the driving factors of M&A of the real estate and build the M &A performance evaluation system of real estate enterprises. Using the case method, with the help of the M&A performance evaluation system, this paper analyzed the performance of Chinese real estate enterprises-Vanke after M&A from short-term and long-term performance, finding out the factors to drive the improvement of performance of vanke through M&A. According to the analysis of the case, a series of suggestions are proposed from internal and external to improve performance of real estate enterprise after M&A of our country.

Finally, this paper puts forward some suggestions to the participants of M&A. For example, listed real estate enterprises should pay attention to the cost of M&A and resource integration; Government departments should pay attention to marketization; Intermediary agent should be diligent and responsible

Key words: Real estate enterprises; Horizontal M&A; Events study; Factors analysis; Performance

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CHAPTER 1

INTRODUCTION

1.1 Research Background and Significance

1.1.1Research background. It is not enough for companies to rely on their own strength alone to obtain sustainable operation and long-term development in modern times. When a company's wealth accumulation cannot support its expansion, it will resort to capital operation means such as M&A. George J. Stigler, a U.S. economist, has also confirmed the positive effects of M&As on the development and growth of companies, arguing that it is remarkably common to see growth of large companies through mergers of competitors and that almost all large U.S. companies have grown through mergers of some degree and in some way, not through internal accumulation. In fact, M&As enable companies to allocate resources more rationally and expand their size and value through a series of links such as expanding production scale, reducing operating costs, completing business integration and realizing synergy effects. Therefore, M&A theory has been paid attention to by many scholars at home and abroad and has been repeatedly verified and developed in continuous practice and academic activities.

China's real estate industry has been developing rapidly since 2003, playing an increasingly important role in the national economy. As an important pillar industry in the national economy, it is characterized by a large degree of relevance and strong driving force. In the process of industrialization, urbanization and modernization, the real estate industry has gradually become a major economic growth driver in the development of the national economy. As the real estate market further matures and the concentration continues to rise, M&As have become an important trend. M&As in the real estate industry are gradually booming driven by the industry and policies.

First, the macro-control strengthens. In order to curb the excessive growth of housing prices and the serious inflation, China abandoned after January 2010 its previous loose monetary policy and took a series of severe macro-control measures, i.e., raising interest rates and deposit reserve rates. These measures have undoubtedly brought a huge impact on the credit financing of the real estate industry. On the one hand, it is difficult for the real estate developers to obtain loans through banks and on the other hand, the obstruction of the property sales process prevents the timely collection of funds. This poses a huge challenge for real estate developers, especially small and medium-sized ones. In such a context, small and medium-sized companies that have less financing channels and limited background are vulnerable to M&As by large companies that can access to diversified financing channels and innovative financial products. Secondly, competition in the real estate market has intensified. China tightens macro-control policies, which restricts the credit financing channels of real estate industry and suppresses people's desire to buy real estate. It undoubtedly seriously inhibits the development of real estate industry, thus, many real estate developers have entered a downturn. Again, land resources are difficult to obtain. Land is a fundamental resource for the development of real estate developers. Nowadays lands are increasingly scarce in the context of urban expansion. Land auction prices are getting higher and higher. Coupled with the constantly rising cost price, real estate developers are facing with huge cost pressure. If M&A is adopted to acquire land resources of the acquired party, the land cost can be reduced.

Based on the above-mentioned policies and market environment, the growth rate of the output value of the real estate industry has gradually slowed down to the extent of increasing limited space and the industry threshold of the has further increased. As of 2018, the number of China's real estate developers was 979,000, an increase of 2% year-on-year; the total assets of companies reached RMB85.3 trillion, an increase of 18% year-on-year. As shown in Figure 1-1 and Figure 1-2, the growth of the industry scale tends to slow down; the industry gradually approaches saturation. The industry concentration of China's real estate developers by sales amount has significantly growing since 2010 and dropped from 2019. However, the industry concentration still remains high, as shown in Figure 1-3, of which CR5 real estate developers accounted for 17.99% of sales amount; CR10 real estate developers; 26.28% and CR30 real estate developers reached 43.79%, with obvious rate in leading real estate developers. The competition in the real estate industry is intensifying as it becomes more difficult for real estate developers to acquire land resources and expand their scale through traditional means. In the face of the increasingly fierce competition, companies are forced to seek for scale development. It is more common to see merger of small companies by big ones and of big ones by big ones.

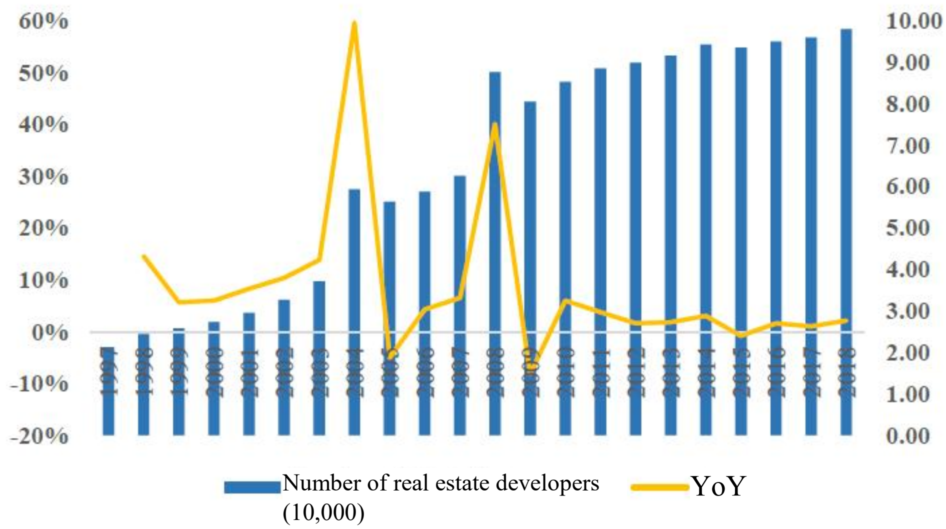


Figure 1-1 Number of real estate developers

(Source: Wind)

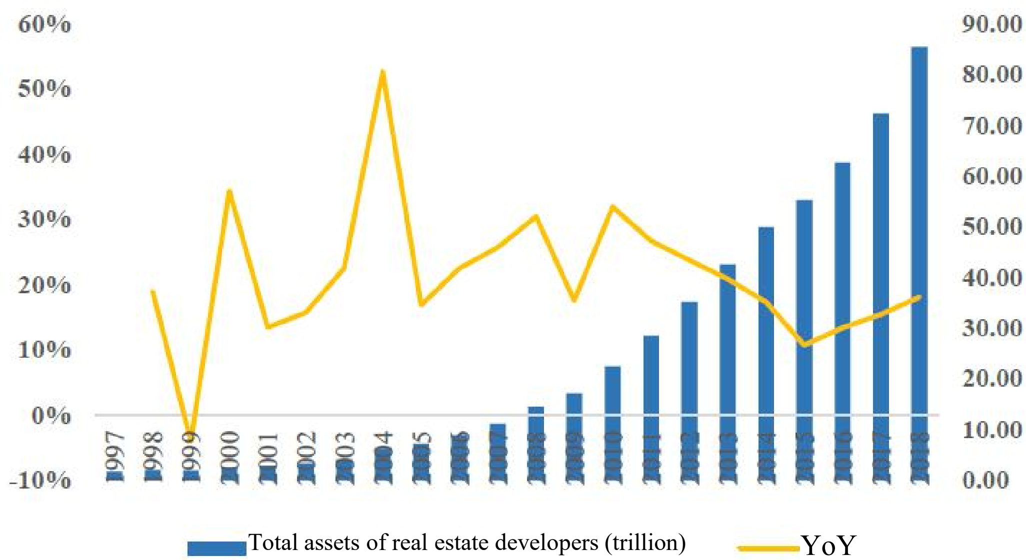


Figure 1-2 Total assets of real estate developers and year-on-year comparison

(Source: Wind)

We can see the above analysis that for the real estate industry, one of the pillar industries of China's national economy and a typical capital-intensive industry, M&As have become an important means for real estate developers to improve their viability and in recent years, the number of M&As has increasingly grown, especially horizontal M&As. As shown in Figure 1-3 below, the scale of M&A in China's real estate industry has shown a significant rise since 2012, reaching a peak of RMB390.937 billion in 2017 and then declined in 2018 and 2019. Meanwhile, the number of M&As of real estate developers from 2012 to 2017 increased as a whole, with the largest number in 2017, reaching 360. Among them, the number and value of M&As in the third quarter of 2017 were 122 and RMB151.737 billion, respectively. Compared with 2017, the M&A number and value have declined in the past two years, with a year-on-year decrease of 28.48% and 27.96% in 2019, respectively. However, compared with other industries, the real estate industry has strong asset-heavy attributes, with large investment scale and slow capital recovery. Moreover, M&A is also an extremely complex capital operation, making large-scale horizontal M&A by real estate developers more difficult.

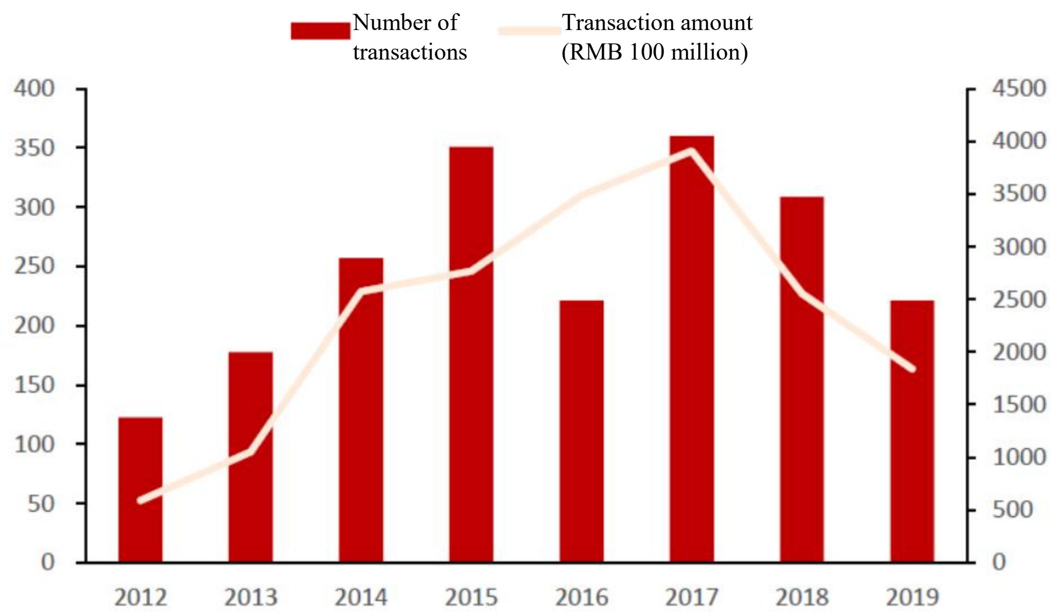


Figure 1-3 M&As of real estate developers in China (Note: data are from wind)

For real estate enterprises, M&As enable them to obtain vital production and operation resources such as land and capital, realize strategic layout, further expand market share, or eliminate the impact of horizontal competition, thus playing a key role in their expansion and long-term development. At present, the scale of China's real estate industry remains at a low level, characterized by unreasonable industrial structure and resource allocation, few high-quality enterprises, and restrictions on enterprises in such aspects as land, financing and sales due to the strengthened state macro-control, which have intensified the competition of real estate enterprises and further boosted the reshuffle and integration of the real estate industry. However, little research has been done by Chinese experts and scholars on the following questions: whether the M&A performance of real estate enterprises is satisfactory, how to improve the M&A performance of real estate enterprises, and what issues should be focused on in M&As? A perfect theoretical system is missing.

The development of the real estate field is related to people's livelihood and the development of the country. Mergers and integrations will inevitably change the value and operation mode of real estate companies. Attentions shall be paid on problems such as the motivation behind the frequent mergers of real estate companies in recent years, how to improve the companies' performance, and how to reasonably integrate after mergers. In order to solve these problems, this paper discusses the important practical significance of real estate investment on promoting the in-depth development of the real estate field. Many real estate companies made frequent M&As for the purpose of reducing land purchase costs or quickly entering other new fields. To avoid failure of M&As, accurate measurement of corporate performance and adoption of measures to improve M&As performance are critical. Successful M&As can provide experience for the industry. All activities before, during and after M&As are worthy of our research and analysis. These activities include the preparatory work of both parties before M&As, the specific M&A activities during the transactions, and whether the integration of resources afterwards is scientific and reasonable. Real estate companies shall learn from both failures and successful experiences to increase the success rate of M&As. In addition, the development of the real estate industry relates to the housing problem of ordinary people. Due to the characteristics of the real estate industry, the adjustment of government policies will inevitably have a huge negative impact on the development of the entire industry. Real estate M&A performance issues can support, to a certain extent, local government departments to make timely assessments and carry out more reasonable macro-control for market players, thereby promoting the healthy and sustainable development of real estate business.

Therefore, starting from the characteristics of the real estate industry, this paper takes nearly a hundred listed real estate enterprises as the sample to analyze the driving factors of real estate M&As, and construct a M&A performance evaluation system for real estate enterprises. Then the paper employs the evaluation system to evaluate Vanke’s M&A of Nandu Real Estate, analyzing the short-term and long-term performance changes of Vanke after M&As, and figuring out the reasons for the positive effects of Vanke through M&As. Finally, the paper proposes suggestions from both the micro and macro perspectives, with an aim to improve the performance of real estate M&As in China.

1.1.2 Research significance. The key to evaluating the success of an M&A is to assess whether the M&A brings positive benefits to a company's operation. This paper precisely explores the M&A of listed real estate developers from the perspective of M&A performance and analyzes the performance of short-term market performance and long-term financial performance of the case using the event study method and financial factor analysis method respectively, hoping to provide theoretical and practical references for domestic scholars’ or listed real estate developers' related research or M&A decisions.

(1) Theoretical meaning

Previous studies on M&A performance have mostly explored general regularities from a macro perspective. Scholars have mainly used large samples of data to empirically analyze and study general rules and conclusions of the market or industry, paying little attention to a particular company or micro M&A event, not to mention case studies on real estate M&A. They ignore the specificity of micro M&As. Often, it is not only the quantifiable key indicators that determine M&A performance and success, but also certain micro, specific factors and even unexpected conditions in the M&A decision and execution process

In addition, China's real estate industry has entered a new transformation period since the new era, i.e. the "Silver Age". In this paper, we use a case analysis method to study how and to what extent the M&A decisions affect the short-term stock price fluctuations and which specific ability indicators of the long-term financial performance, taking into account the special characteristics of the real estate industry and companies involved in M&As. The case analysis method provides a more visual and concrete analysis of the extent to which different factors affect and evaluates the M&A performance. Thus, it is a useful addition to the research related to M&A performance in terms of substance and content.

(2) Practical meaning

As a pillar industry of China's economy, the real estate industry has become more competitive in recent years and the M&A boom has emerged, so it is of great significance to study the M&A decision-making behavior and performance evaluation of real estate developers for the smooth operation of the national economy. Since Vanke Group, a leading real estate developer in the industry, guided to "survive" at the end of 2018, many small and medium-sized real estate developers are also facing the difficult choice of "eat or be eaten". Therefore, a large number of real estate developers hope to obtain resources and seize the market through M&A to ensure their survival and development.

This paper hopes to explore the impact of M&A on business performance and the factors that influence it through the study of M&A decisions, motives and performance evaluation via specific cases and to provide realistic insights and references for the current development and transformation of real estate developers in China.

1.2 Contents and Methods

1.2.1 Contents. This paper mainly conducts an in-depth research on the following four components:

1. Firstly, this research analyzes the status quo and motivation of M&As of Chinese real estate enterprises. First, this paper analyzes the M&A situation of Chinese real estate enterprises from the perspectives of the number and value of M&A transactions. Second, based on the characteristics of both the real estate industry and real estate enterprises, this paper studies the driving factors of M&As by Chinese real estate enterprises from the internal and external perspective.

2. Based on the characteristics of real estate enterprises and M&A motivations, this paper selects appropriate financial and non-financial indexes to construct the M&A performance evaluation system of Chinese real estate enterprises.

3. This paper conducts an empirical research on the short-term and long-term performance of Chinese A-share real estate enterprises in horizontal M&As of small real estate enterprises. For short-term performance, this paper selects real estate developers that undergo horizontal M&As as the research object, calculates the cumulative abnormal return CAR for the event window (-10,20) through the capital asset pricing model, and analyzes the trend of CAR to derive the impact of M&As on the short-term performance of real estate developers concerned. The sample selected in this paper for long-term performance is the same as that selected in the short-term performance study. We collect various financial indicators in the year before M&A, the year of M&A, the first year after

M&A and the second year of M&A, then measure the performance scores of each year through the factor score model and finally analyze the changes of performance scores in each year, to derive the impact of M&As on the long-term performance of real estate developers involved.

4. We use the above research methods to analyze specific M&A cases and evaluate their M&A performance, providing practical and policy guidance for later M&As.

In general, this research addresses the impact of M&As on the long-term and short-term performance of real estate enterprises, the expected effects and purposes for real estate enterprises, and how to better facilitate the successful M&As of real estate enterprises.

1.2.2 Methods. (1) Literature study

We also conduct an in-depth study of domestic and foreign literature on M&A. After reading a large amount of domestic and foreign literature on M&A motives, M&A performance and M&A performance influencing factors, we sort, classify and evaluate the said literature. At the same time, we further combine the knowledge of finance, accounting and management disciplines to deepen our understanding of M&A.

(2) Empirical analysis

First, the event study method. Selecting appropriate window periods and estimation periods, we calculate the cumulative abnormal return CAR by capital asset pricing model and compare the changes in CAR to evaluate the short-term performance of horizontal M&A.

Second, the method of combining financial indicators method and factor analysis method. The long-term performance of horizontal M&A is evaluated by combining the constructed financial indicators system with the factor analysis scores of each year of M&A.

(3) Case analysis

Although M&A performance has been a hot issue in academic research, empirical studies tend to ignore the specificity of M&A cases and generalize the specific issues. Therefore, there may be an omission. Hence, this paper adopts a single-case analysis method to conduct a comprehensive and systematic analysis of specific M&A cases, clearly showing the whole process and providing an in-depth analysis in order to get a whole picture.

1.3 Research route

Figure 1-4 below show the research route of this paper. The paper as a whole is divided into four major parts: the first part is a theoretical study that first finds the problem, i.e., what are the factors influencing the horizontal M&A performance in the real estate industry and how to evaluate the changes in the M&A performance of the main acquirer before and after the M&A? Combining the development status of the real estate industry and the relevant theories of M&A performance, we analyze the influencing factors of M&A performance and clarify our research method. The second part is the empirical analysis, which establishes models to empirically analyze the short-term performance and long-term performance of listed real estate developers' M&A respectively. The short-term performance mainly examines the stock price effect of the M&A window while the long-term performance mainly examines the comprehensive performance score of each year before and after the M&A. The third part is a case study, which starts with Vanke's M&A of Nacity and delves into the impact of the said M&A on Vanke's long- and short-term performance. The fourth part draws conclusions and makes recommendations from different perspectives, combining the empirical findings.

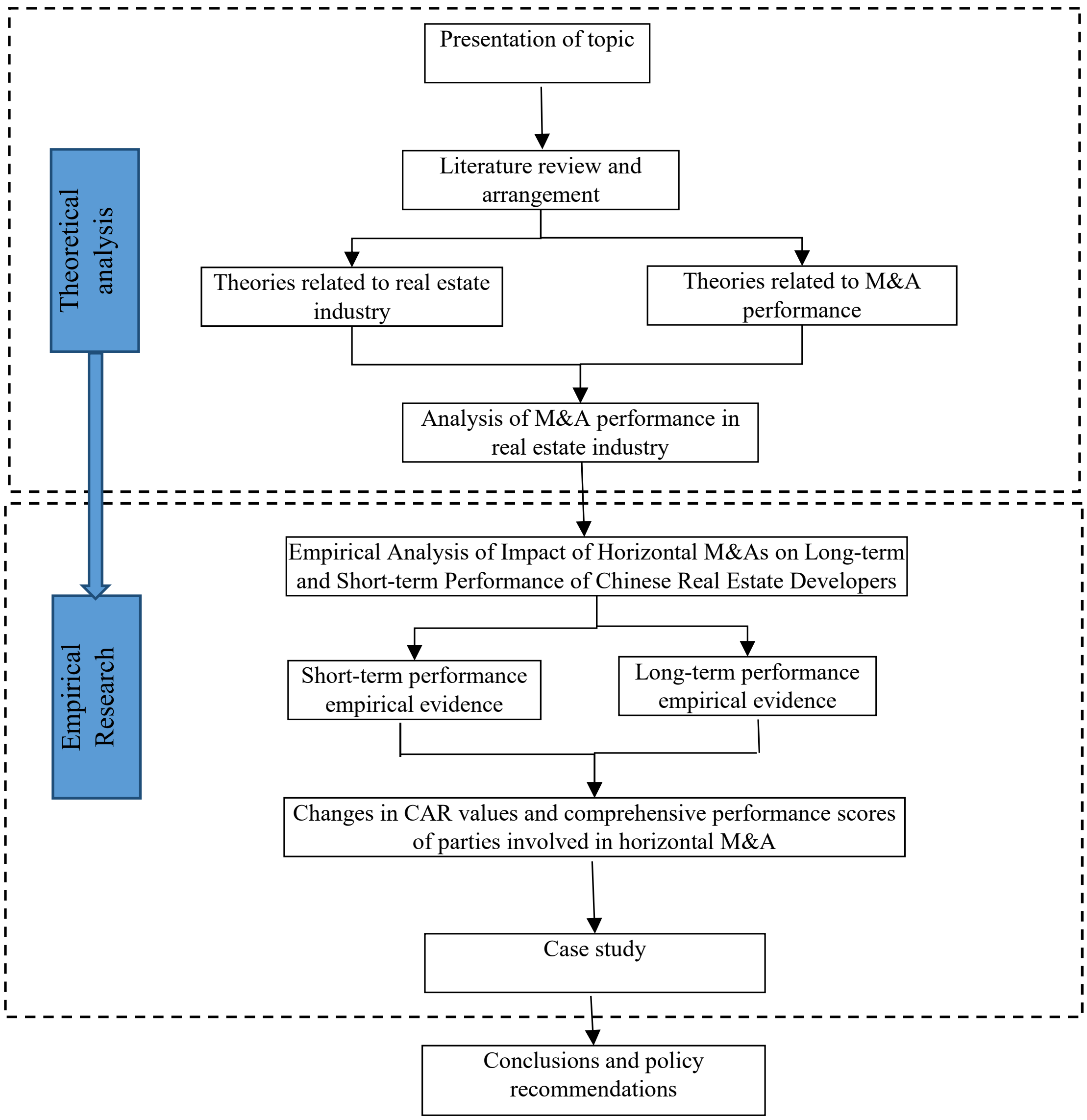


Figure 1-4 Research techniques

1.4 Innovation and weaknesses

1.4.1 Innovations. This paper makes the following innovations:

(1) It reveals the synergistic effect of horizontal M&A of listed real estate developers in China. Amid tightening government regulation and control policies, large listed real estate developers cope with the development difficulties caused by government regulation and control, such as tightening financing channels, high land acquisition costs and insufficient land resources through horizontal M&As and realize the synergistic effect brought therefrom.

(2) It conducts comprehensive analysis of M&A cases. Usually, past case studies on M&A mainly focus on qualitative analysis of motive or quantitative analysis of performance, but this paper analyzes horizontal M&A of listed real estate developers from three dimensions: motive before M&A, valuation during M&A and performance after M&A. We collect relevant data and information, review policy documents and probe into the real estate industry before M&As to support the analysis of M&A motives. Then, we use various valuation methods to improve the accuracy. Meanwhile, we study both short-term capital market performance and longer-term financial performance and add the ex-post window period which is rarely covered in the relevant literature in event study method used to study short-term performance.

1.4.2 Research shortcomings. First, this paper does not consider non-financial factors and only select indicators of earnings, debt service, operations, development and cash capacity of the sample companies. Secondly, this paper together studies the short-term and long-term performance of real estate M&As, while the long-term performance study needs data from two years after the M&As. In addition, this paper starts from horizontal M&As, which leads to insufficient timeliness and small sample size when selecting the horizontal M&A samples.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FOUNDATIONS

We collect, read, study and summarize the related books and domestic and foreign literature and the literature and theoretical contents of M&A motive theories, such as efficiency theory, principal-agent theory, information asymmetry and signaling theory, transaction cost theory and market power theory and M&A motives, M&A performance and their influencing factors and then raise our research perspective to lay theoretical foundation for the subsequent analysis.

2.1 Literature Review

The Western countries, represented by the United States, have experienced six waves of M&As since 1897. Their research on M&A began in the 1960s, while the research on M&A performance issues began only after the 1980s. We focus on three major issues regarding M&A performance: its deriving theory, evaluation method and empirical study.

At present, three methods are mainly used to study the M&A performance of listed companies at home and abroad: stock price-based event study method, accounting research method based on financial indicators and case analysis method. Overall, Chinese companies' M&A started late and the research thereon is also late.

2.1.1 Research on M&A and M&A motives. M&A refers to mergers and acquisitions. Mergers and acquisitions are usually combined internationally and abbreviated as M&As. The fundamental feature of M&A is the transfer of control of a company. A merger is a merger of two or more companies to form a single company by means of a merger of property rights (usually in which the superior absorbs the inferior).

Mergers include both mergers and consolidation. An acquisition is a transaction in which a company acquires control of another (called the target company) by purchasing its assets, divisions, shares, etc. After the acquisition, the legal personality of the target company will remain as a result of the acquisition.

The difference between a merger and an acquisition is that a merger is the merging of two or more companies into one, while an acquisition is the exercise of control by one company over another. However, an M&A in practice includes both merger and acquisition and it is difficult to make a strict division, so both academic research and actual economic activities usually use M&As together.

M&As have become increasingly important in the modern economy. Stigler once suggested that all most all large U.S. companies grown through outward acquisitions and mergers. The world economy has experienced five M&A climaxes since the first M&A climax in the Western countries in the last decade and today M&A has a history of more than 100 years. The M&A-related theories have also become one of the most active areas of research in Western economics.

The study of M&A motives is based on synergy effects, diversification strategies and market power and has been studied in depth by domestic and foreign scholars.

(1) Synergistic effect

H. Igor. Ansoff (1965) first introduce the concept of synergy effect. Through his research, he believed that M&As can render positive synergy effect as they not only could expand companies' scale, but also improve their production and operation efficiency. Jensen & Ruback (1983) conclude from their study of M&A motives that M&As generate positive benefits and can bring value growth. Their study shows that companies improve production and human management efficiency through M&As and gain positive financial effects after M&As. Their research findings demonstrate the feasibility of the "synergy theory". Servaes (1991) analyzes the M&A motives and effects from the perspective of corporate management. He concludes that the unilateral transfer of management resources can improve the overall management efficiency and obtain synergistic effects at the management level when the management efficiency of the two parties differs significantly. Houston JF, James CM&Ryngaert MD (2001) find through their study that achieving synergies is an important reason for management's decision to be involved in an M&A. Garzella, Stefano, Fiorentino, Raffaele (2017) argue that M&A is chosen by an increasing number of entrepreneurs when they plan their development strategies and that synergies brought about by M&As play an important role in M&A decisions and performance evaluation and that obtaining synergies thus becomes a key motive for M&As.

Compared with foreign research on synergy acquisition, China's research in this area has lagged behind, but rich theoretical results have been achieved. Wu Jing and Xu Xiangyang (2004) argue that M&A promotes the complementary advantages of the target and acquirer, which improves the competitiveness of the acquirer and the acquirer also obtains synergy effects as it has improved production and operation efficiency to a certain extent. Yang Zimu (2012) believes that synergy effect is the most common motive for M&As. After the analysis of financial synergy effect, Yang concludes that gaining financial effect is not only gaining profit, but also improving financial management and obtaining tax avoidance effect and anticipation effect. Teng Li (2017), by studying Terun's M&A of Tianao, concludes that the synergistic effect obtained by companies after a successful M&A is an important motive for companies to consider from the perspective of production and operation. By studying the case of Alibaba's vertical M&A of ELEME, Zhao Xuanmin (2020) finds that after the completion of this M&A, Alibaba still retains the original brand of ELEME to attract the market via the brand, which can be concluded that playing synergy effect is the key motive of this case.

(2) Diversification strategies

Diversification strategies are also an important reason for M&A activities. Malcolm and Wolf (1978) finds that acquisitive diversifiers generate larger returns (through increased earnings and capital appreciation) for their share holders than non-diversifiers do, diversification involves expanding a company's business activities into new markets or sectors to reduce risk, increase revenue streams and stabilize earnings. Richman, Mitchell and Schulman (2016) also points out M&A activities help companies achieve diversification by acquiring businesses in different industries, geographies, and product lines. This enables companies to spread their risk across multiple markets and reduce their dependence on any one market or product. Moreover, diversification can help companies to access new technologies, gain economies of scale, and improve operational efficiencies.

(3) Market power

Market power is another key motive for M&A activities. Companies seek to increase their market power through M&A activities by acquiring competitors or by merging with other companies. Gronum(2015) indicates that it enables companies to gain greater pricing power, increase market share, and reduce competition. By increasing market power, companies can also benefit from economies of scale, enhance their bargaining power with suppliers, and increase their ability to invest in research and development.

Furthermore, Adams and Neely (2000) believes that M&A activities can also help companies to achieve strategic objectives such as expanding into new markets, gaining access to new technologies, and improving their competitive position. For example, companies can acquire businesses with complementary products or services to enhance their existing offerings and increase their customer base.

2.1.2 Effects of M&A on Performance. (1) Foreign research based on the impact of M&A on corporate performance

Foreign scholars' research on corporate mergers and acquisitions started earlier, and they have drawn rich conclusions. At the end of the 19th century, along with the economic cycle and industrial maturity, M&As were prosperous in western countries. In order to better study the impact of M&As, domestic and foreign scholars have conducted extensive research on the M&A theories and the impact of M&As on corporate performance. To this end, foreign scholars mainly apply the accounting research method and event study method. The event study method focuses on reflecting the short-term M&A performance; the accounting research method focuses on evaluating the long-term performance. Although a large number of scholars have used these two methods to study M&A performance, the research findings are different.

First, some scholars have found through their research that M&A does not have positive benefits on business performance.

Meeks (2012) studies the change in earnings of 233 companies in the United Kingdom that were involved in M&As between 1964 and 1972 and get that: 155

companies had a consistent decline in total assets return below the industry level over a five-year period. .

Jarreell, Brickley and Netter (1988, in a study of 663 M&As in the United States between 1962 and 1985, reveal that the excess return of the acquirer was 2% in the 1970s and decreased to -1% in the 1980s, in contrast to the acquirer, where the target company received a stable 30% excess return.

After study 1164 M&As after 1955, Agrawal, Jaff and Mandelker (1992) reveal that the cumulative excess return of the target company over the three years was -7.38%, indicating that the M&As did not have a wealth effect on the acquirer.

Scherer & Ravenscraft (1987) analyze financial indicators for 471 M&As that occurred between 1950 and 1977 and show that the profitability of companies that underwent M&As was significantly lower than the average profitability of the industry.

Dodd, Ruback (1977, 1980) and Bradley & Wakeman (1980) reveal that M&As led to a 20%-30% increase in the target company's earnings rate; while they did not improve the parent company's operating efficiency and even produced significant negative earnings of the parent company. .

However, some foreign scholars have also conducted in-depth studies on M&A cases and have come up with diametrically opposed findings, which show that M&As bring positive benefits to the companies concerned.

Manson, Stark and Tomas (2000) study 38 M&As that occurred in the UK and conduct an in-depth study of the company performance before and after M&As, which reveal that M&A can be effective in improving operating cash flows.

Healy, Palepu and Ruback (1992) conduct an in-depth study of the largest M&A that occurred in the U.S. between 1979 and 1984, in terms of M&A size. The study results show that the sample companies had higher operating cash flows compared to their peers who did not undergo any M&As, while the M&As significantly increased the return on capital of the acquirer.

Research results of foreign scholars reveal differences in market effectiveness among countries due to different research methods, sample selection and time periods of research and there is no uniform conclusion.

(2) Research on the impact of M&A on corporate performance in China

The research results of domestic scholars are somewhat similar to those of foreign countries and the findings of current scholars can be classified into two categories.

First, some scholars have argued through their research that M&As do not have a positive effect on the related companies and may even appear to reduce business performance. .

Pang Qi and Zhang Jianping (2015) study listed companies that were involved in M&A in 2011 and evaluated the M&A performance of listed companies one year before the M&A to two years after the M&A through factor analysis. Studies show that the performance in the year of M&A improves in the short term, but in the long term the performance after M&A is significantly lower than that before M&A and the decline is much higher than the increase in performance in that year.

Tong Shenghui and Wang Jun (2015) conducted an empirical analysis on the data of centrally listed enterprises from 2007 to 2011 and found that for centrally listed enterprises, the overall performance was negative within four years from the start of M&A. The M&A strategy failed to improve the performance. .

In an empirical analysis of listed real estate developers' M&As from 2010-2012, Zhang Sisi (2016) concludes that the trend of real estate developers' M&A performance shows an upward and then downward trend. overall M&As fail to produce a lasting positive impact for most real estate developers. .

Han Liyan and Tang Yu (2006) apply the event study method to empirically analyze the M&As in China's real estate industry with M&A amounts exceeding RMB 5 million during 2002-2004. They fund that the excess return appears to be significantly higher after the M&As and a successful M&A will bring significant financial synergy effects.

Zhu Shuo (2019) took M&A events of Chinese listed enterprises from 2014 to 2015 as a sample, and studied the impact of M&A events on M&A performance by calculating the enterprise's abnormal return rate in the range. The research divides M&A events into three types: vertical M&A, horizontal M&A and mixed M&A. It founds that from three days before the M&A announcement, the enterprise has obtained a significant excess return rate, indicating an early disclosure of information in the stock market. The enterprise's CAR continued to increase, short-term M&A performance was significantly positive, and the abnormal returns of mixed M&As were much higher than those of vertical M&As and horizontal M&As.

At the same time, some scholars have also conducted studies comparing short-term M&A performance with long-term one and concluded a negative relationship between short-term and long-term M&A performances.

Zhao Xi and Li Xiao (2020) use event study method and EVA method to evaluate the short-term and long-term M&A performance based on listed real estate developers involved in M&As that occurred from 2011 to 2013. The study results indicate that in the short term, M&As can lead to a significantly positive excess return; however, M&As will decrease the long-term performance.

The above literature analysis makes clear that domestic and foreign scholars have developed a rich body of research findings on the impact of M&As on performance. However, due to differences in samples, geographical and temporal elements, their conclusions are not generalizable. At the same time, different research window period and index system construction are also important reasons for the conflicting research results. Domestic and foreign scholars primarily use the event study method and accounting research method for their research. The event study method is used to calculate the excess return of a company to reflect its short-term M&A performance. The accounting research method is used to analyze the M&A performance of the company by measuring the changes in the company's overall business performance before and after the M&A, to reflect the long-term M&A performance.

2.1.3 Research on the factors influencing M&A performance. (1) Research on factors influencing M&A performance of foreign companies

Foreign literature often studies factors influencing M&A performance in terms of the M&A type, industry relevance, terms of payment, premium level and company size.

Jensen (1983), applying the efficiency theory, argues that conglomerate M&A cannot improve the operational efficiency and therefore M&A performance is inferior to horizontal and vertical M&A within the same industry.

Agrawal (1992) and others empirically analyze the relationship between long-term excess returns and M&A methods and reveal that horizontal M&A had the best effect, while vertical and conglomerate M&A had insignificant effects.

Cakicieta (1996), after studying 195 M&As of public companies that occurred in the United States from 1983 to 1992, reveals a positive relationship between the M&A performance and the size of the two companies, with the larger the size of the acquirer and the smaller the relative size of the target, the higher the possible gains.

Mulherin and Boone (2000), through a study of 1305 M&A cases during the decade of the 1990s, conclude that industry concentration is evident in acquisitions and divestitures and that the success of restructuring is significantly correlated with its relative size.

Song and Walking (2000) argue based on their study of M&A performance of real estate developers that in real estate M&A, when multiple competitors are involved and the acquisition is successful, the size of management ownership of the target company is closely related to the target company's shareholder returns, while the size of the target company's equity is negatively related to the extraordinary returns of the acquirer. For the acquirer, if the leverage of the surviving company increases after the M&A, the excess returns will increase and vice versa; at the same time, the likelihood of acquiring the next successful acquisition target increases by participating in acquisition competition and the resulting excess returns will increase.

Louis (2012) finds that the long-term excess returns are zero when the company involved in M&As effects payments in cash, while the value is negative and highly significant when it makes share-based payments.

(2) Research on the factors influencing M&A performance of Chinese companies

Chinese scholars have conducted more studies on the influencing factors of M&A performance in recent years primarily in terms of the M&A mode, M&A size, payment mode, equity structure, core competence, choice of target companies and government.

Using five financial indicators such as the growth rate of main business income, Zhang Junrui, Li Wanli and Zhou Jin (2002) analyze the M&As of listed companies in 1998 and conclude that: M&A had positive performance in general; M&A performance relies mainly on the replacement of superior and inferior assets and related-party transactions rather than the realization of synergistic effects through M&A; conglomerate M&A and government-led M&A are ineffective.

Li Xindan, Fu Hao, Wang Fenghua, Zhu Hongliang et al. (2013) analyze through a comparative study of the three-year performance before and after M&A of 103 M&A companies in Shanghai in 1998. They believe that M&A performance is positively related to M&A scale, i.e., the larger the M&A scale, the more obvious the M&A performance improvement; meanwhile, M&A performance is related to the nature of companies and the M&A performance of state-owned companies is higher than that of private players.

Pan Jin and Chen Hongmin (2015) reveal that the M&A performance of M&A transactions with a high degree of association is significant than those with a low degree of association; the M&A performance of cash payment is lower than that of non-cash payment and the performance of conglomerate M&A is lower than that of horizontal M&A by analyzing 153 M&A samples on Shanghai and Shenzhen stock markets in 2004.

Liu Jinghu (2013) studies 78 M&As of real estate developers with a single terms of payment from 2005 to 2009. He reveals that the short-term M&A performance of real estate developers is different from that of general companies; the M&A terms of payment has a significant impact on short-term M&A performance and the decision type of horizontal integration strategy and securities payment achieve higher short-term M&A performance than others.

2.1.4 Study of M&A performance in the Chinese real estate industry. In China, the M&A market involves companies from various industries in the national economy and real estate occupies an significant position because of its large number and strong capital, so the success or failure of M&As has an important impact on the M&A market in China. Therefore, in response to the changes in M&A performance in China's real estate industry, many Chinese scholars have studied the M&A performance of listed companies in the real estate industry, but no consistent conclusions have been obtained.

After studying the impact of different factors on the M&A performance of listed real estate developers in China, Liu Zhengju (2012) reveals that real estate M&As in China reduce performance; the equity nature and structure have a negative impact on performance; the relative size of the transaction has a positive impact and whether it is a connected transaction does not have a significant impact on performance.

Li Ze (2011) uses the financial indicator method to evaluate the M&A performance of listed companies and reveals that the performance of real estate developers is best in the year of M&A, while it significantly declines in the later period and starts to improve after two years.

Applying the event study method and financial indicator analysis method, Hou Jie (2013) reveals that real estate M&A companies perform better in the short term, while long-term performance is related to the integration process in the later M&A stages and can show competitive advantages when economies of scale and synergy effects are achieved.

Xiong Xin (2014) studies the M&A performance of real estate developers in the Pearl River Delta region of China based on the balanced scorecard and reveals that M&A performance is closely related to the characteristics of both parties involved, governmental behavior and the integration process after the M&A, so each should be focused when evaluating performance.

Meng Jun (2013) and Zhang Jian (2015), on the other hand, study the M&As of YMCI and Vanke, respectively, using a case analysis method. Results show that from the perspective of shareholders' equity, YMCI's M&A performance increased in the short term and decreased in the long term, while from the financial indicator method, the performance decreased and then increased. In the case of Vanke's M&A of Nacity, on the other hand, both short-term and long-term performance showed a positive change.

2.1.5 Domestic and international research progress. Research on M&A performance still differs to some extent in terms of methodological choices and conclusions among domestic and foreign scholars. Securities markets in countries such as the United States and the United Kingdom are more mature and the market effectiveness is higher, so foreign scholars are keen to use the event study method to study M&A performance and analyze the impact of M&As on corporate performance from different perspectives. The event study method and financial indicator method basically render the same research findings results: the shareholders of the target company are the biggest beneficiaries of the M&A and their shareholder wealth is significantly improved thereby; while the performance of the acquirer does not change significantly compared with the target company and there is no substantial improvement; overall, the M&A still brings some improvement to the total revenue.

Compared with most foreign researchers who prefer the event study method, Chinese scholars choose the financial indicator method more often, which is of course consistent with the basic situation of the current Chinese securities market. Although many scholars use the event study method to conduct research on M&A performance, there is no clear conclusion on whether the Chinese stock market meets the premise of the event study method, making the accuracy of the findings questionable. As a result, Chinese researchers have mostly used the event study method to evaluate the short-term performance of M&As and the financial indicator method to conduct long-term studies. Most of the scholars using the event study method believe that the shareholders of the target company are the biggest beneficiaries of the M&A and have gained positive benefits, while the changes in the shareholders' equity are still controversial. The majority of scholars using the financial indicator method are in agreement that the business performance has improved significantly in the short term, but the sustainability is not strong and the long-term trend is obvious.

Compared with the more mature studies in foreign countries, the research on M&A performance in China still has many shortcomings from various aspects. First, performance evaluation and research lack consideration of motives and industry status. Then, performance evaluation is mostly at the micro level and lacks macro consideration.

Lastly, different emphasis is placed on short-term and long-term performance evaluation and we mostly judge the performance and wealth gains through M&A in the short term. In summary, this paper measures the short-term performance of real estate developers involved in horizontal M&As through the event study method, measures their long-term performance using the financial indicator method combined with the factor analysis method, evaluates the impact of horizontal M&As of real estate developers on the performance in terms of M&A motives and proposes a series of recommendations at the micro and macro levels in combination with relevant cases to promote the improvement of M&A performance of real estate developers in China.

2.2 Theoretical basis

2.2.1 Concept and definition of M&As. The concept of M&A comes from economics. Internationally, M&A is called "Mergers & Acquisitions", or "M&A" for short, which is a general term for Mergers and Acquisitions. The concept of M&A is not yet uniformly defined in China and most scholars have made a distinction between "M&As" in a broad and narrow sense. Broadly speaking, M&A includes mergers, acquisitions, divestitures, asset swaps, debt restructuring, share repurchases and others, while narrowly speaking, M&A only includes mergers and acquisitions.

Acquisition usually refers to the act of a company using cash, stocks or bonds in the capital market to acquire part or all of the equity or assets of another company and gain control of it. Acquisitions can be divided into asset acquisitions and equity acquisitions. Asset acquisition refers to the acquisition of part or all of the assets of the target. When the acquirer acquires all the assets of the target, the target will lose its legal personality. Equity acquisition means that the acquirer directly or indirectly acquires part or all of the equity of the target and becomes a shareholder thereof.

The concepts of mergers and acquisitions are often difficult to define in practice and are often referred to collectively as "M&As". The term "M&A" generally refers to the act of property rights transaction in which a company acquires control of another company in a market-oriented manner.

Other definitions similar to M&As are: corporate restructuring, merger, purchase and takeover. But although these close concepts are close to the meaning of M&A, there are actually some differences.

Reorganization: it has the broadest scope of all related concepts and is usually interpreted as the reunification of the productive resources of one or two companies by a company. Takeover, acquisition and merger all fall within the scope of reorganizations.

Takeover: it is the act of acquiring control or even ownership of another company without necessarily transferring property rights such as equity or assets. Typical forms are equity acquisitions, asset acquisitions, tender offers and mergers.

Mergers: including two major forms: merger and consolidation. Merger is a kind of merger in narrow sense, while consolidation refers to two or more companies are merged to form a new company and original companies are dissolved and legal statuses disappear.

Table 2-1 General M&A structure

Main structure		Form
Merger	Merger in narrow sense	Merger
	Merger in broad sense	Merger
Acquisition		Consolidation
		Asset acquisition
		Share acquisition

In summary, this paper does not strictly distinguish between concepts such as M&As and takeovers in its theoretical analysis. The M&As covered include mergers, consolidation and the purchase of shares or equity in order to participate in capital operations or to gain control of other listed companies. The definition emphasizes the operational form of property rights, rather than the general form of production and management behavior and excludes structural rearrangement. It is in line with the relevant provisions of Chinese listed companies and does not conflict with relevant theories.

2.2.2 Classification and classification of M&As. There are various ways to divide the M&A types based on different perspectives and the main ways of division are shown in Table 2-2 below.

Table 2-2 Main types of M&A and their descriptions

Classification criteria	Type	Description
Industry of parties involved in M&As	Horizontal M&A	Between companies in the same industry, to expand production and market share
	Vertical M&A	Between companies in the upstream and downstream of the industry chain, to reduce transaction costs
	Conglomerate M&A	Between companies in different industries, to diversify and diversify risks
Terms of payment	Cash M&A	Paid in cash
	Stock M&As	Paid in the form of shares of the acquirer
	Bond transfer M&A	Bonds are converted into equity when debtors become insolvent
	Indirect holding M&A	The acquisition is achieved by acquiring the largest shareholder of the target company
Relationship between M&A parties	Affiliated M&A	Both parties are related and the transaction has priority
	Non-affiliated M&A	There are no related parties and the transaction is fair
Attitude towards M&As	Good faith M&A	Pre-M&A communication and agreement between the parties
	Hostile M&A	The target company is unaware of the case and the acquirer adopts coercive measures
Whether through exchange	Offer to acquire	Offer to shareholders of the target company through the stock exchange
	M&A by agreement	Private agreement with shareholders of the target company without going through an exchange
Country of M&A participant	Domestic M&A	The parties belong to the same country
	Cross-border M&A	The parties are companies of different countries

The paper studies horizontal M&A of Chinese listed real estate developers based on the M&As according to the industry and the industrial status of the acquirer and the target company. Among the three types of horizontal M&A, vertical M&A and diversified M&A, focus in laid on horizontal M&As which are also real estate developers.

2.2.3 M&A motive-related theories. M&A as a business activity has a number of economic consequences for both parties to the transaction. Whether these economic consequences achieve the expected purposes of the participants and whether the initial planned arrangements are realized need to be made clear in the context of M&A motives. In the history of M&A development, many scholars have further classified, summarized and generalized the classical theories of M&A motives by studying the actual operating conditions, cash flows and market performance of M&A companies. These theories cover both traditional and modern theories, mainly including efficiency theory market power theory, signaling theory, transaction cost theory, principal-agent theory, information asymmetry theory and information and signaling hypothesis, etc. However, there is no single theory that can explain the internal motive of all M&As.

(1) Efficiency theory

Efficiency Theory, also known as Synergy Theory, suggests that companies engage in M&As for "synergistic effect", i.e., 1+1>2. The efficiency theory implies two assumptions: ① the internal management of the acquirer is already effective and the remaining management resources can be utilized through M&As; ② the target can improve management efficiency by increasing management resources and bringing in external managers. The synergy effects obtained after M&As are roughly classified into management synergy, operational synergy, financial synergy, etc. The meaning of synergistic effect is that the overall effect obtained by combining various different resources is greater than the direct sum of their individual parts. After a company adopts an M&A, the resources of both parties involved in the M&A are combined, so that their resources can be reasonably allocated and fully utilized, which enhances the operational efficiency and improves the profitability. In addition, synergy theory believes that M&As

not only help companies increase their value, but also contribute to the improvement of the whole social economy.

(2) Market power theory

An important motive for M&A is to increase market share, but increasing market share does not only mean increasing the size of the company, in fact, increasing market share means increasing the size of the company relative to other companies in the same industry, which is also the core point of the market power theory. According to market power theory, in order to dominate the market, companies will acquire other players in the same industry, which not only reduces the market share of competitors, but also increases the market share of the acquirer itself. The acquisition of other companies in the same industry may drive competitors out of the market and increase the market share of the acquirer, thus increasing the market position and control of the acquirer over the market. When this control reaches a certain level, it can raise product price and obtain excess profits by virtue of its dominant position in the market, which is commonly known as monopoly profits. This theory is also known as the market power theory or the monopoly power theory.

First of all, when the market demand of an industry decreases, the industry will have excess production capacity. In order to avoid price cut and reduce the industry-wide profit, companies need to occupy a favorable position in the industry and maintain their own survival and development. Second, economic globalization brings more intense international competition and the domestic players are bound to face the challenge of certain industries by the strong impact of foreign products in the same industry, which requires companies in the same industry to achieve economies of scale and expand market power to cope with external competition in a capacity of a company group via M&As. Once again, the improvement and development of the legal system will certainly promote the legalization and internalization of certain illegal ties or practices through M&As, so as to gain market power that can continue to control the market.

The market power theory also develops. In the past, market power theory believes that M&As are intended to control the market, that is, to control the environment in which companies operate and develop and that the direct result is to reduce the number of competitors in the same industry in the market. In other words, when market concentration increases, the long-term consequence that one or several oligopolies or unicorns emerged in the market and that market prices would be easier to manipulate through the collusion of a few companies, so the market power will eventually bring excessive monopoly profits. In order to avoid monopoly and monopoly profits, governments of mature capital markets have enacted a series of laws and regulations against unfair competition and monopoly to prevent companies from obtaining undue benefits through their market power.

(3) Signaling theory

In the case of information asymmetry, there are three common signals for transmitting internal information to the outside world: profit declaration, dividend declaration and financing declaration. Dividend declarations are a more plausible signaling pattern than the manipulability of accounting treatment of profits.

Ross (1977) is the first to systematically introduce the information asymmetry theory in his analysis of capital structure and dividend policy. That is, assuming that the internal information about future returns and investment risks is held unilaterally by managers and investors do not have access to such internal information, the only option for investors is to evaluate the value of the company through the information (e.g., capital structure, dividend policy, etc.) transmitted by managers to the external market.

A decrease in dividends is not always bad news and an increase in dividends is not always good one. The market is most concerned with whether the nature of the dividend signal is positive or negative, while whether the dividend increases or decreases is secondary information, a decrease in dividends that conveys positive information will lead to a positive market reaction and an increase in dividends that conveys negative information will lead to a negative market reaction.

Dividend signals are divided into three roles: confirmation, clarification and confusion. The amount and consistency of company disclosures are closely related to the role of dividend signals. When the information disclosed by the company is sufficient to reveal its operating conditions and the information disclosed is highly consistent in revealing its operating conditions and the information conveyed has too little non-expected information, the deterministic effect played by the dividend increase signal is not strong. However, if the company discloses less information, or the consistency between the disclosed information is not strong, the information conveyed by the dividend signal is conducive to eliminating uncertainty in investors' judgment and causing a strong market reaction.

(4) Transaction cost theory

In 1976, R. Coase introduced the concept of transaction costs, which was further expanded by Williamson. Both argue that companies can achieve consistency of interest between internal exchanges through expansion. The transaction cost theory is more often expressed through vertical M&As. Due to the issues of asset specialization, transaction uncertainty and transaction frequency, companies can have reduced transaction costs from M&As.

In general, the higher the asset specialization, the higher the potential transaction cost in the market. When asset specialization reaches a certain level, the potential transaction cost will inhibit companies from continuing to rely on the market and companies are likely to choose vertical M&As to reduce potential transaction costs. The greater the uncertainty of transactions and the higher the frequency of transactions, the higher the transaction costs in the market. When the market transaction costs are greater than the internal coordination costs, the greater the likelihood of vertical M&As.

(5) Agency theory

Jensen and Meckling systematically elaborated the meaning of agency in their article released in 1976, where the ownership and operation of a company are separated in a principal-agent relationship between shareholders and management and agency costs arise if the contract between shareholders and management is incomplete or cannot be executed cost-effectively [21]. Agency costs thus include the cost of contracting between the principal and the agent, the cost of monitoring and controlling the agent by the principal, the cost required for the principal to qualify the agent to execute the optimal or suboptimal solution and the loss of residual profits. M&As may alleviate principal-agent problems through several scenarios.

M&As reduce agency costs. Fama and Jensen suggested in 1969 that M&A may be an external control to alleviate the problem when the principal-agent problem cannot be effectively controlled through organizational and market mechanisms [22]. Takeovers allow external managers to step in and cover the existing management and board of directors through a tender offer to gain control of the target. M&As will always threaten the survival of the company if the business performance is poor due to mismanagement or agency problems, making it an effective way to monitor the working conditions of management.

(6) Asymmetric Information Theory

In the 1970s, three economists, G.A. Akerlof, A.M. Spence and J.E. Stiglitz, studied commodity trading, labor and financial markets respectively and jointly proposed the Asymmetric Information Theory (IIT). The theory suggests that buyers and sellers in market economic activities know different information about the transaction and that sellers have more relevant information than buyers. The seller can benefit by transmitting information to the buyer, while the buyer has to bear more transaction costs if it wants to obtain information. Market signals can compensate for the difference in information asymmetry to some extent.

Information asymmetry can be divided into ex ante and ex post information asymmetry. The main reason for ex ante information asymmetry is that the party with more information deliberately conceals information unfavorable to itself for its own benefit, resulting in inefficient resource allocation. Due to the ex ante information asymmetry, the acquirer has to pay high transaction costs and faces the possibility of M&A failure. Ex post information asymmetry affects the post integration process and the lack of understanding of the organizational mechanisms, production methods and corporate culture of the target leads to conflicts, which in turn affects the M&A performance.

(7) Information and signaling theory

Dodd and Ruback found in 1977 through their study that the market value of the target company is re-estimated regardless of the success of the M&A, showing an overall upward trend. The hypothesis suggests that there are two main reasons for the increase in the share price of the target company, one is that M&A signals that the target company is undervalued, causing the market to re-estimate the target company's share price without any action by the target company and its stakeholders; the other regarding takeover bids, it suggests that the management of the target company will be motivated by the offer to actively adjust management strategy and improve operational management efficiency, thus increasing the stock valuation driven by the takeover bid (without other external forces).

2.2.4 Methods to evaluate performance of horizontal M&As. M&A performance refers to the achievement of M&A intentions and the efficiencies after integration of the target company into the acquirer. At the macro level, M&A performance refers to the impact of M&A on the technological progress, structural adjustment and economic growth of the industry and a fairly large scale company will be formed to contribute to technological innovation; at the micro level M&A performance refers to the comparison of the performance of the company before and after the M&A and the change in benefits brought by the acquirer and other relevant stakeholders, which is specifically divided into the benefits brought by the M&A to stakeholders such as the company's management, creditors and owners, or changes in the company's business, or improvement of the product mix, financial indicators, etc. Corporate performance, from the management point of view, is the effective output of the company at different levels, both quantitative and qualitative, in order to achieve the goal of benefits expected by the stakeholders and is the ultimate goal of all activities carried out by the management. The main methods used by domestic and foreign scholars to evaluate performance include: event study method, accounting research method, case analysis method, etc. Different methods also have their certain adaptability as well as their respective advantages and disadvantages.

(1) Event research method

Fama, Fisher et al. (1969) [50] propose the event study method, which has now become a common method for measuring the response of the securities market to events, announcements and other corporate behaviors that lead to changes in the stock price and is also an important tool for measuring the degree of impact of M&As on corporate value and testing M&A performance.

The event study method treats the M&A as an event at a point in time and selects a certain period of time, centered on the announcement date of the M&A, as the "event period" for observing the market reaction and calculates the normal securities trading price for a certain period of time before the event period, i.e., the "estimation window". The expected rate of return is calculated by comparing the normal rate of return with the expected rate of return during the event period to evaluate the M&A performance. However, there is still a lot of controversy among domestic scholars as to whether this method is really suitable for the Chinese stock market. In addition, the event study method essentially measures the change in shareholder value through the degree of stock price reaction to the M&A, but there are many factors that affect the stock price and the impact of irrelevant factors on the stock price cannot be eliminated by this method. On the other hand, not only the shareholders are affected by the M&A event, but also the management, employees, debtors and other stakeholders and the impact on them is not taken into account. Therefore, the event study method is still rather one-sided.

(2) Accounting research method

The accounting research method focuses on the measurement of a company's post-M&A business performance by selecting a number of financial indicators that represent the company's operating effectiveness and discovering changes in performance through horizontal comparisons with pre-M&A indicators or vertical comparisons with industry averages or indicators of similar companies, thus examining the changes in operating ability brought about by the M&A. Several relevant indicators are usually selected from various aspects, such as profitability, solvency, growth and cash situation, to study performance and operating ability before and after the M&A. The M&A effects, such as synergistic effects, diversified operations and reduced risk level, will still be reflected in business performance indicators eventually, so the financial indicator method is relatively scientific.

However, there are some unavoidable defects in the accounting research method. Due to the existence of accounting fraud, the financial statements of listed companies are likely to be "whitewashed", so the conclusions obtained through this method may not be accurate. At the same time, financial indicators to reflect changes in business capacity may be studied over a longer period of time and it is difficult to divorce the impact of other events or changes in the company's own business capacity. Unlike the event study method, which reflects the market's expectation of the M&A effects, the financial indicators reflect business capability and performance over a period of time, which is backward-looking and ignores the measurement of non-financial indicators such as market share, market satisfaction rate and brand effect, which is not comprehensive.

(3) Other research method

First, the case analysis method based on specific M&A studies the M&A performance of an M&A. Unlike most studies on M&A performance in the industry or the market as a whole, the case analysis method focuses on the performance of a particular company as a result of M&A. The study often combines the characteristics of the industry in which the company operates, corporate strategy, etc., to study M&A performance from multiple perspectives and the results are more comprehensive and accurate.

Secondly, the EVA method, which takes into account the opportunity cost of equity and debt capital, uses the after-tax operating profit after deducting the capital cost as a measure of shareholder wealth, overcoming the traditional method that only considers accounting profit and ignores economic profit. However, it is one-sided to evaluate M&A performance using only this single indicator and profitability analysis will ignore the impact of M&A on other aspects of operating capacity.

Subsequently, the balanced scorecard, which adds based on the traditional financial indicators evaluation method, several non-financial indicators to analyze the company from multiple perspectives and is more comprehensive, but it is difficult to obtain information on many non-financial indicators before and after the M&A, which makes the study more difficult to implement.

Previous studies primarily analyze the M&A performance of listed companies from macro and micro perspectives. Macroscopically, they mainly focus on the interaction between M&A of listed companies and the securities market, as well as the impact of M&A on revitalizing state-owned stock assets, promoting industrial restructuring and upgrading and optimizing social welfare. Microscopically, they mainly focus on the changes in the M&A performance of the parties involved in the M&As before and after the M&A, i.e., the changes in profits and the changes in the relevant interest subjects brought by the integration of the elements of the companies concerned. They are mainly reflected in two aspects: first, the changes in benefits brought by the M&A to the stakeholders such as creditors, operators and owners of the companies and second, the changes brought by the M&A to the companies themselves, such as solvency, growth capacity, management ability, profitability, equity expansion ability, etc.

This paper focuses on the performance of M&A at the micro level, with a focus on the changes in the M&A performance. In order to comprehensively reflect the M&A performance, this paper intends to establish a comprehensive and reasonable financial indicator system and adopt the event study method and accounting research method to empirically study the long-term and short-term M&A performance of listed real estate developers in China.

CHAPTER 3

INDUSTRY ANALYSIS OF LISTED REAL ESTATE DEVELOPERS IN CHINA

3.1 Concept and characteristics of real estate in China

Real estate, in common terms, refers to specific houses, occupied land and the ownership of houses and the right to use occupied land, which is the concept of real estate described in this paper. However, in a broad sense, real estate also includes a country's mountains, rivers, minerals and various infrastructures. The real estate industry, in general, refers to the industry of real estate development, real estate leasing, real estate brokerage and other business related to real estate.

Based on the above, we can further summarize the characteristics of real estate in China.

First, the real estate industry is fundamental. The real estate industry plays a fundamental role in promoting national economic construction and the overall development of residents' material and spiritual life. The real estate industry is a comprehensive and highly interrelated industry and its development can drive the development of other industries. The real estate industry promotes the construction of national basic facilities and meets the needs of residents for travel and tourism in their increasingly rich material life. The real estate industry also provides essential office and living conditions for company development and residents' lives.

Second, the real estate industry is comprehensive. The comprehensive nature of the real estate industry is reflected in the fact that it runs through all aspects of production, circulation, distribution and consumption. The industrial chain of the real estate industry is unimaginably long and extensive. The construction, circulation and operation of real estate involve more than 30 industries, such as construction, installation, cement, steel, sand and gravel, intellectualization, greening, home furnishing, home appliances, consulting and even waste disposal.

Finally, the development of the real estate industry is uneven. Geography causes unbalanced economic development, the population of eastern cities is larger than that of western cities and the economic output value in the east is generally higher than that in the west. The development of the real estate industry is also unbalanced, with the development of the real estate industry in eastern provinces and cities significantly better than that in western provinces and cities and the development of the real estate industry in coastal cities is better than that in inland cities. In particular, the stock of commercial real estate, which can express economic vitality, is significantly higher in the east than in the west and the scale of real estate sales in the eastern provinces and cities is tens or even hundreds of times that of the western provinces and cities.

3.2 Current status of China's real estate industry

3.2.1 Development history. The real estate industry is the barometer of national economic development and in recent years, it has been one of the hottest industries in China. No other industry has absorbed such a huge scale of investment and received such intensive attention from the whole society as real estate. Since the implementation of China's reform and opening-up policy, the socialist market economy system has been gradually established and improved and the national economy has maintained rapid and continuous development, the income and living standards of the general public have also been improved and its demand for housing has gradually come to the fore. The real estate industry has gradually developed and grown up in this background. In the reform of China's economic system, the reform of the real estate industry started late in comparison and the recovery and development of China's real estate industry originated from the reform of the housing system and the land system.

In the new century especially since 2003, both international players and China keep optimism about the development of China's economy and the government also vigorously mobilized the enthusiasm of various investment bodies. The real estate industry again showed signs of overheated investment, with speculators occupying a large part of the market in many cities and the vacancy rate of commercial housing increased significantly. From tightening of land resources to tightening of banking funds, the government introduced a series of regulatory policies to cool the real estate market, but the effect of these policies is not very obvious, the growth rate of real estate investment in 2007 reached 35%, the national housing prices rose by 7%. Affected by the U.S. subprime mortgage crisis in 2008, China's real estate market fell briefly and real estate prices and transactions have dropped significantly. In 2009, China introduced a series of policies to stimulate the development of real estate and the real estate market began to heat up rapidly again and China's real estate industry stepped into the long road of national macro-control.

Table 3-1 Development of business models in China's real estate industry

Date	Business model	Business characteristics	Market environment
Prior to 1992	Government allocation model	Government welfare housing and land allocation without compensation	Planned economy era
1992-1994	Market speculation model	Obtain land development rights and bank loans and develop with a small amount of own funds	Uneven real estate policies in each region
1994-1998	Transition model	Maintain old features while developing new business models	Adjustment and market depression
1998-2003	Leverage model	Leverage real estate development for huge returns	Listed real estate as a pillar industry and introduced a series of supporting policies
2003 - Present	Capital operation mode	Capital-intensive industry; the financial attributes of real estate are further reflected	Macro-control; land and bank resources tightening

3.2.2 Development status. (1) Rapid development

In order to better reflect the development status of China's real estate industry, this paper begins with the number of real estate developers, employees, land prices, investment amounts of real estate developers and commercial housing operations and sales in China in previous years.

With the passage of time, all data of the real estate industry are increasing. Table 3-2 below shows that the number of real estate developers has increased nearly five times from 24,378 in 1998 to 103,226 in 2020; the real estate land turnover has increased more than five times from RMB326.932 billion to RMB 1,726.388 billion and other indicators have also increased in varying degrees, indicating that China's real estate industry is booming.

Table 3-2 Number of real estate developers, employees and land prices in China

Year	Number of real estate developers .	Number of real estate employees .	Real estate land turnover (RMB 100 million)
1998	24410	825987	—
2000	27311	972011	—
2005	56310	1516147	3269.11
2006	58723	1600947	3318.21
2007	62537	1719732	4572.16
2008	87632	2100347	4832.69
2009	80416	1949278	5151.32
2010	85267	2391154	8211.13
2011	88514	2256847	8895.45
2012	89361	238794	7411.53
2013	91438	2593857	9916.32
2014	94186	2761173	10020.98
2015	93572	2739427	7631.46
2016	94962	2752299	9132.81
2017	95890	2831126	13657.13
2018	97930	2889200	16415.08
2019	99534	2937355	14790.82
2020	103226	2901523	17263.88

Source: China Statistical Yearbook (1998-2017)

From the changes of land transactions in China's real estate industry from 1998 to 2021 (as shown in Figure 3-1), we can see that the land turnover in the real estate industry has been increasing from 2005 to 2011 and the land turnover in 2011 was RMB 889.545 billion. Although there was a temporary decline in 2012, it rose again to RMB991.632 billion in 2013 until 2020, when it reached a high level of RMB1 billion. Again, this indicates that China's real estate industry has been growing at a rapid pace in recent years.

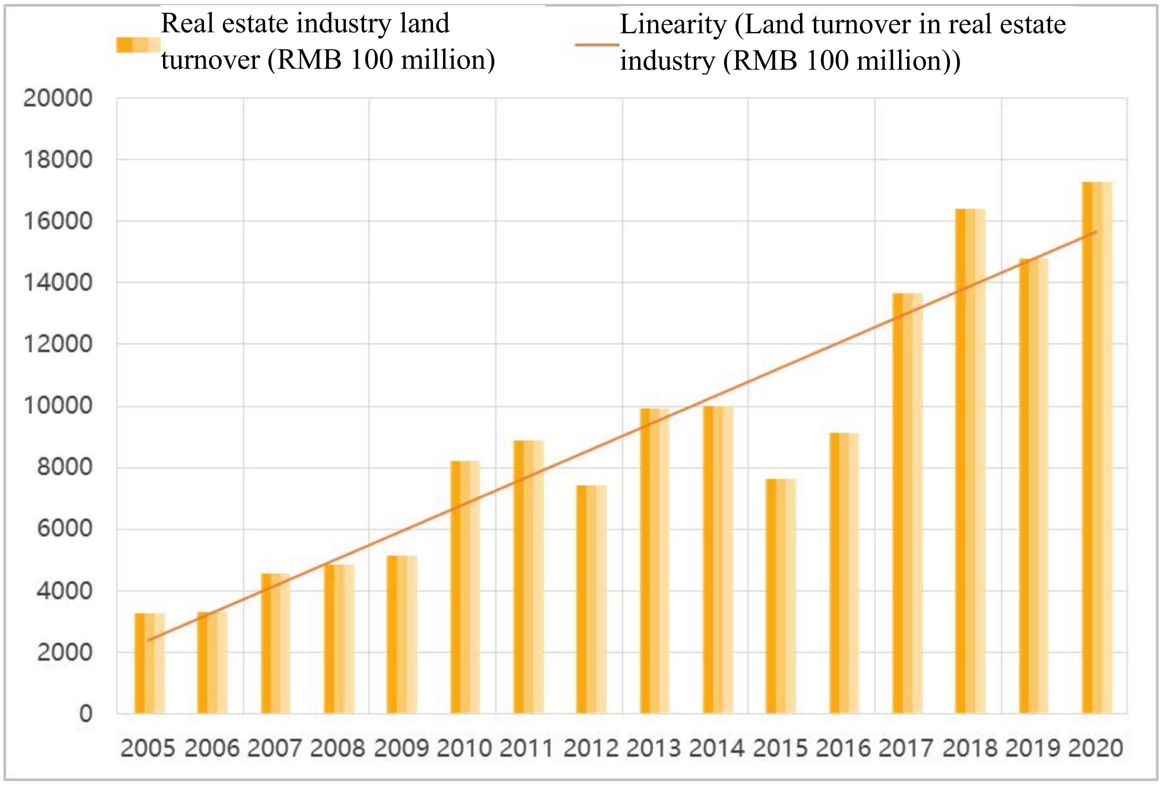


Figure 3-1 Changes in the land turnover of China's real estate industry (2005-2020)

Source: China Statistical Yearbook (2005-2020)

At the same time, the amount of investment in China's real estate industry has shown a solid upward trend, which also showcase from another side the growth of China's real estate industry. Based on the investment in China's real estate from 2005-2017 (shown in Table 3-3 below), we can see that from 2005-2017, China's fixed asset investment increased year by year, so did the real estate development investment and the real estate development investment growth rate remained at a high growth rate of 20%-30% during 2005-2011 and also maintained a high growth rate of about 10% in other years. The proportion of investment in real estate to fixed asset investment basically remains at 18%, indicating that China's real estate investment occupies a large part of the proportion of fixed asset investment and is an important component of national economic growth, fully demonstrating the fundamental position of the real estate industry.

Table 3-3 China's real estate development investment from 2005-2017

Year	Investment in fixed assets (RMB 100 million)	Investment in real estate development (RMB 100 million)	Growth rate of real estate development investment (%)	Share of real estate development investment (%)
2002	58926.3	10289.6	12.12	10.63
2003	62589.6	13956.3	11.61	12.57
2004	72589.6	14985.3	15.67	13.48
2005	88774.8	15913.2	18.28	17.96
2006	109999.7	19431.1	22.11	17.67
2007	137331.4	25289.3	30.21	18.45
2008	172832.7	31211.4	23.43	18.17
2009	224589.7	36246.3	16.19	16.19
2010	251693.4	48261.9	33.25	19.18
2011	311496.3	61789.7	28.09	19.93
2012	374692.5	71814.9	16.23	19.14
2013	446287.6	86017.2	19.84	19.33
2014	512121.6	95034.8	10.51	18.62
2015	562000.9	95984.7	1.00	17.09
2016	606473.1	102584.9	6.91	16.88
2017	641239.7	109799.2	7.06	17.15
2018	678539.8	119825.6	9.05	18.21
2019	715895.6	125963.9	10.26	17.52
2020	768525.9	129832.6	12.36	16.34
2021	791265.5	131256.3	15.92	18.25
2022	845936.9	132563.9	16.85	19.21

Source: China Statistical Yearbook (2002-2022)

China's real estate industry development investment shows a solid growth as shown in Figure 3-2, from which we can see that China's real estate development investment is growing year by year, with a faster growth rate from 2009 to 2013, after which the growth rate slows down, reaching RMB13,256.39 billion at the end of 2022. As shown in the line graph of real estate development investment growth ratio, the investment growth ratio was above 20% in all years before 2012, above 10% between

2012 and 2015 and within 10% in 2017, which is comparable to the growth rate of GDP. Overall, the investment in the real estate industry is in a steady growth stage.

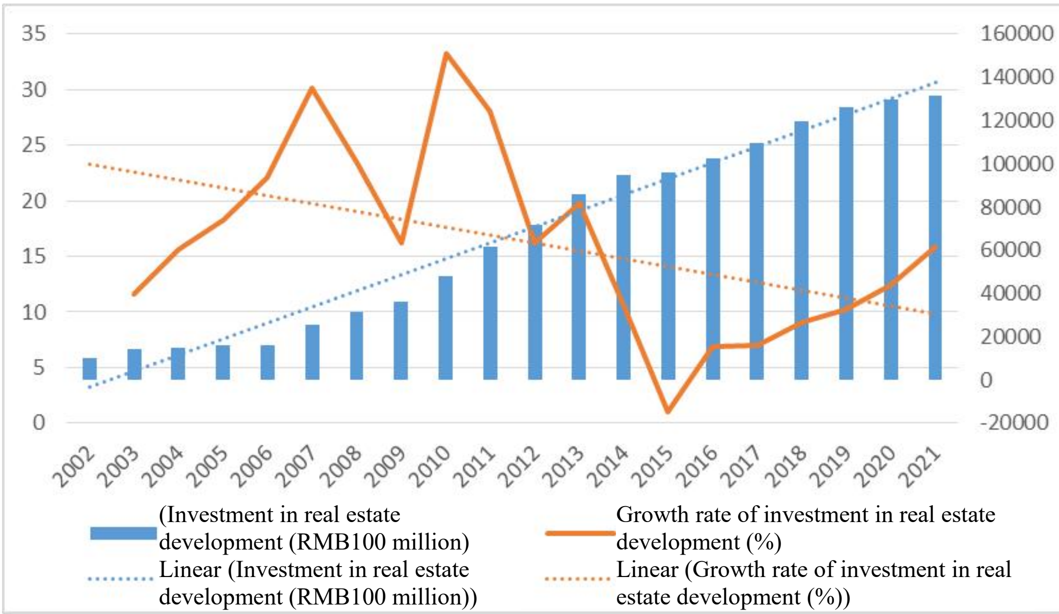


Figure 3-2 Changes in the amount of investment in China's real estate industry (1998-2021)

Source: China Statistical Yearbook (1998-2021)

At the same time, the proportion of investment amount of China's real estate industry to GDP also showed an upward trend (as shown in Figure 3-3), which showed a linear increase year by year until 2014 and only slightly decreased after the state intensified regulation and control in 2015, but leveled off by 2018, with the proportion in GDP still maintained at more than 13%. Its investment amount reached RMB 12,026.351 billion by 2018, an increase of 9.5% over the previous year, more than three times the amount of a decade ago, thus indicating that the real estate industry is still developing rapidly, both in terms of the amount of investment and its share of GDP.

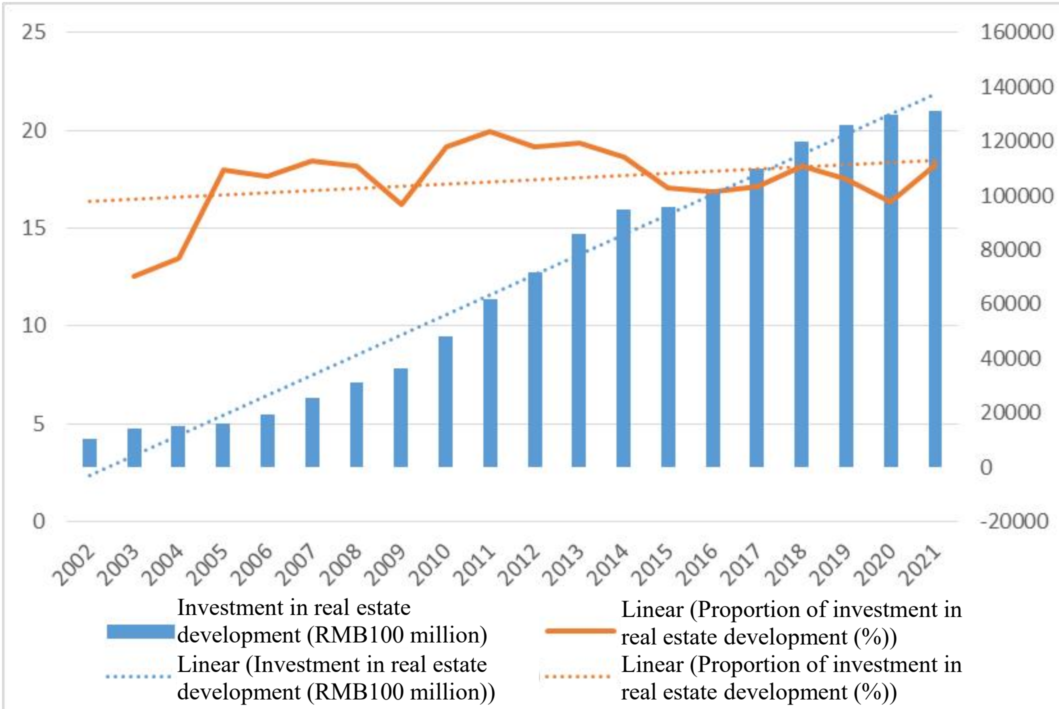


Figure 3-3 Relationship between investment amount of China's real estate industry and GDP (2002-2021)

Source: China Statistical Yearbook (2002-2021)

As for the operation and sales of China's real estate from 2009-2018 (shown in Figure 3-4), we can see that the sales of commercial properties in China's real estate industry were climbing year by year, with a small drop only in 2014 and reached RMB 14,997.274 billion in 2018, an increase of 12.17% over the previous year. Similarly, the sales area of commercial properties also shows the same growth pattern, but the growth rate is lower than that of sales, which is one of the main factors leading to the increase in housing prices. The figure shows that every year the area of new housing construction by real estate developers is much larger than the sales area of commercial properties in that year and the area of new housing construction is 1.34 times of the sales area of commercial properties on average during this decade. The reason for this is, on the one hand, the long development cycle and slow completion of projects by real estate developers and on the other hand, the imbalance between supply and demand in the market due to the still rapid development of the industry, which makes real estate developers have to always maintain an increase in inventory in order to cope with the constant changes in market demand.

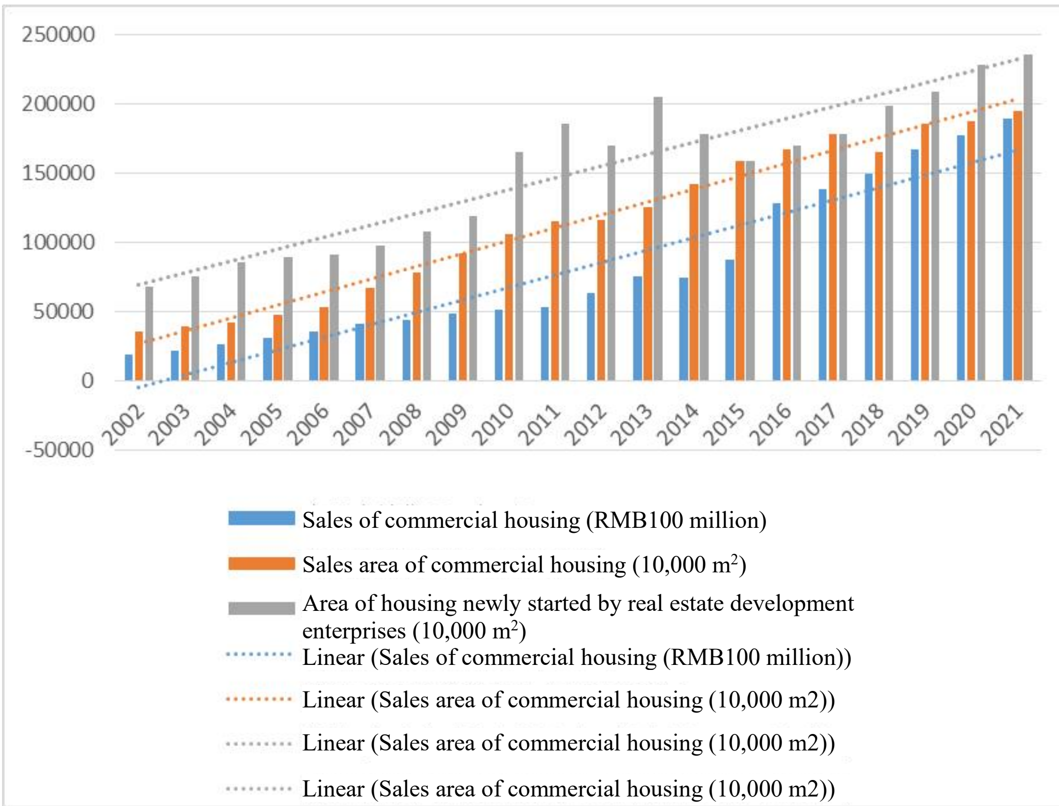


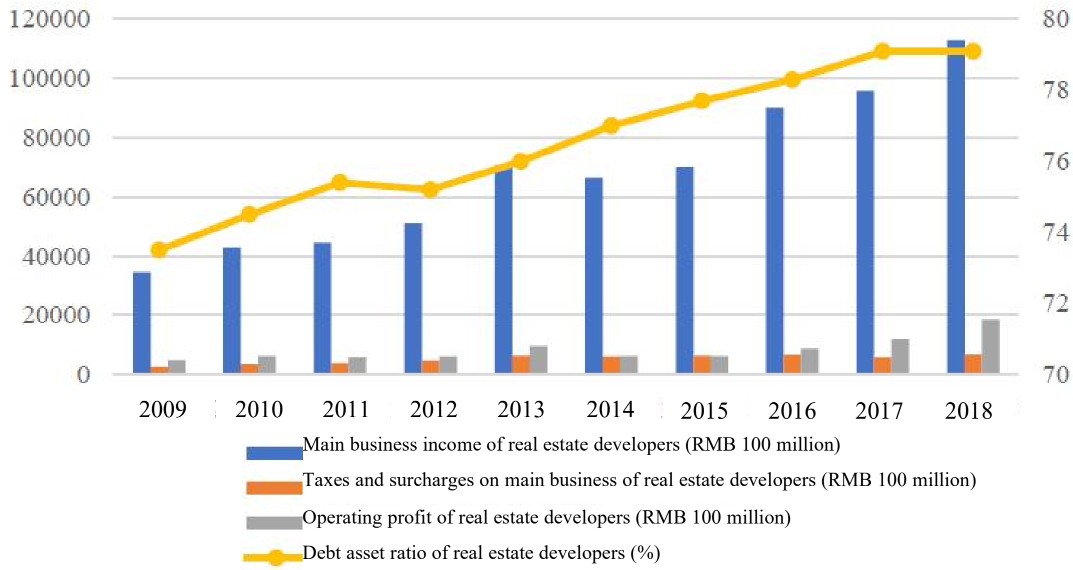
Figure 3-4 Statistical chart of commercial housing operation and sales in China's real estate industry (2002-2021)

Source: China Statistical Yearbook (2002-2021)

(2) The industry is in good operating condition, but the debt-asset ratio is high

The reason why the real estate industry is identified as the pillar industry of China's national economy is not only that its business development is in good condition and is increasingly becoming an important element of residents' consumption demand

and national economic development, but also that its own development will pull the industries related to it to also gradually realize the double expansion of profit and scale and promote the overall development of China's economic market. Through the financial statistics of some real estate developers (as shown in Figure 3-5), we can see that the real estate industry has created a large amount of revenue for the national treasury in terms of enriching the national capital, mainly in terms of taxes and fees. Business taxes and surcharges paid by real estate developers in 2018 amounted to RMB 678.553 billion, an increase of 17.97% year-on-year, reflecting the industry's good business. It is more obvious to see from direct data that the industry is in good operating condition. By 2018, the main business income of real estate developers in China reached RMB 11,292.468 billion, an increase of 17.76% year-on-year, 3.26 times that of 2009. The operating profit also reached a high value of RMB1,854.371 billion, an increase of 58.11% year-on-year, 3.92 times that of 2009. The improvement in the operational efficiency also further promoted the business development of the industry.



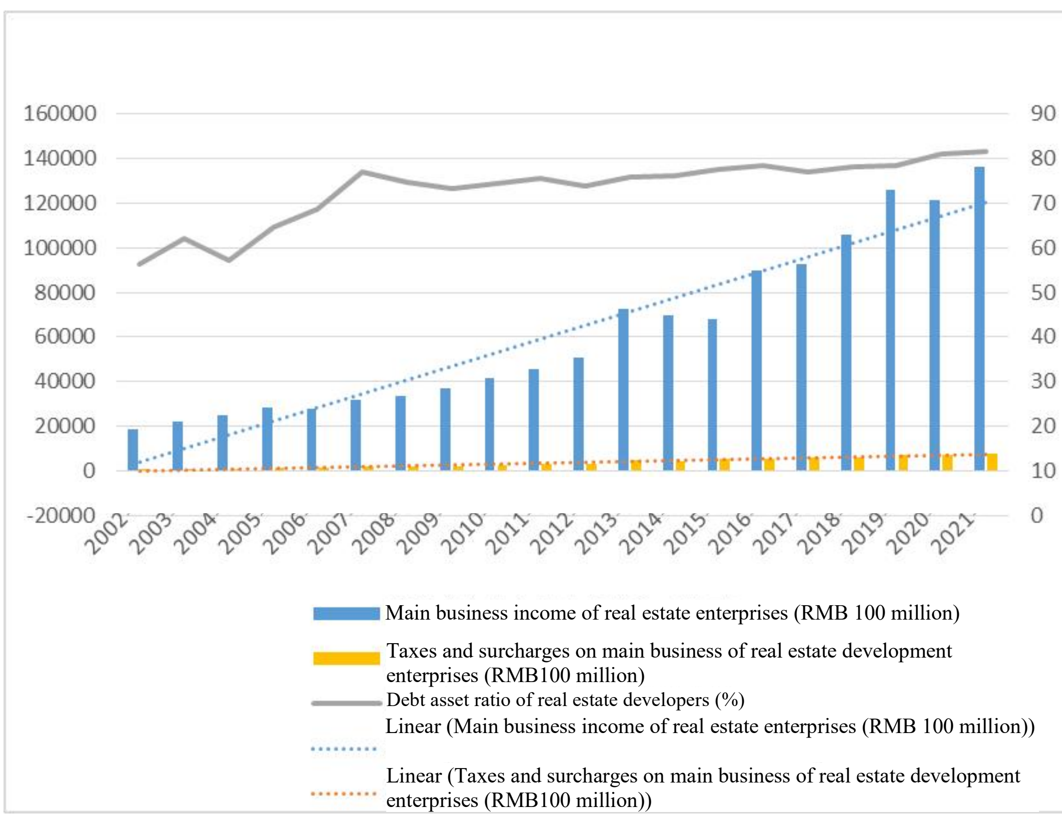


Figure 3-5 Financial data of selected real estate developers in China (2002-2021)

Source: China Statistical Yearbook (1998-2021)

From the above figure, we can also see that the debt-asset ratio of China's real estate developers is on the high side and still shows a trend of linear increase year by year, but after China introduced a series of regulatory policies on land and capital one after another in 2011, the growth trend of the debt-asset ratio has slowed down compared with the previous one, but it is still a trend of linear increase, with an average growth rate of 1.28% from 2009 to 2011 and 1.02% from 2012 to 2017, with a slower growth rate. In terms of the absolute value of the debt-asset ratio, the average debt-asset ratio of the industry was maintained at 76.58% during the last decade, reaching 79.1% by 2018。

The debt-asset ratios of the larger A-share listed real estate developers in China, such as Vanke, Poly and Greenland, were also as high as 85%, 79% and 88%, indicating that it is common to see a high debt-asset ratio in the real estate industry in China. The reason is that companies have a huge demand for funds due to high cost of housing construction and land acquisition and will borrow a lot of funds from banks, but the construction cycle and payback cycle of real estate projects are long.

3.3 M&As of real estate developers in China

Since 2003, the real estate industry has entered a phase of high speed development and a large amount of capital has poured in, which has created asset bubbles while continuously pushing up property prices. In order to slow down the rise of property prices and promote the healthy and stable development of the industry, the government has been tightening the capital channels and controlling the way land is transferred, etc. In this situation, M&As in the real estate industry has become more and more obvious as the eliminated companies either withdraw from the industry or are acquired. M&As provide an effective way for real estate developers to carry out the transformation of strategic resources. The current situation and characteristics of M&A in the industry reflect the situation of real estate developers' M&A as a whole. The analysis thereof has certain application value for studying the M&As of individual companies from the macro level.

3.3.1 M&A size. Driven by the tightening capital land policy and relaxed M&A policy and the strengthening market industry concentration, M&As in China's real estate industry have entered an unprecedented high period. According to WIND, we compiled a statistical chart of the number of M&A and M&A amount in the real estate industry from 2009-2018 (as shown in Figure 3-6). With the increasing wave of M&A, the growth trend of M&A has slowed down. With the re-enforced macro-control, the growth trend has weakened, but is still at a stable peak stage. The growth trend of M&A amount shows the same regularity, from tens of billions at the beginning to hundreds of billions at the peak and then slowing down but still maintaining a scale of over 100 billion. The amount of M&A of individual real estate developers also gradually amplified, from tens of thousands, hundreds of millions, billions at the beginning, to more than 10 billion later on. Typical M&As of Chinese real estate developers are China Overseas' acquisition of CITIC's 126 projects in 24 Chinese cities in 2016 by allotting 10% shares to CITIC for a consideration of RMB31 billion and Ping An's acquisition of 19.7% shares of CFLD for RMB 13.77 billion in 2018, etc.

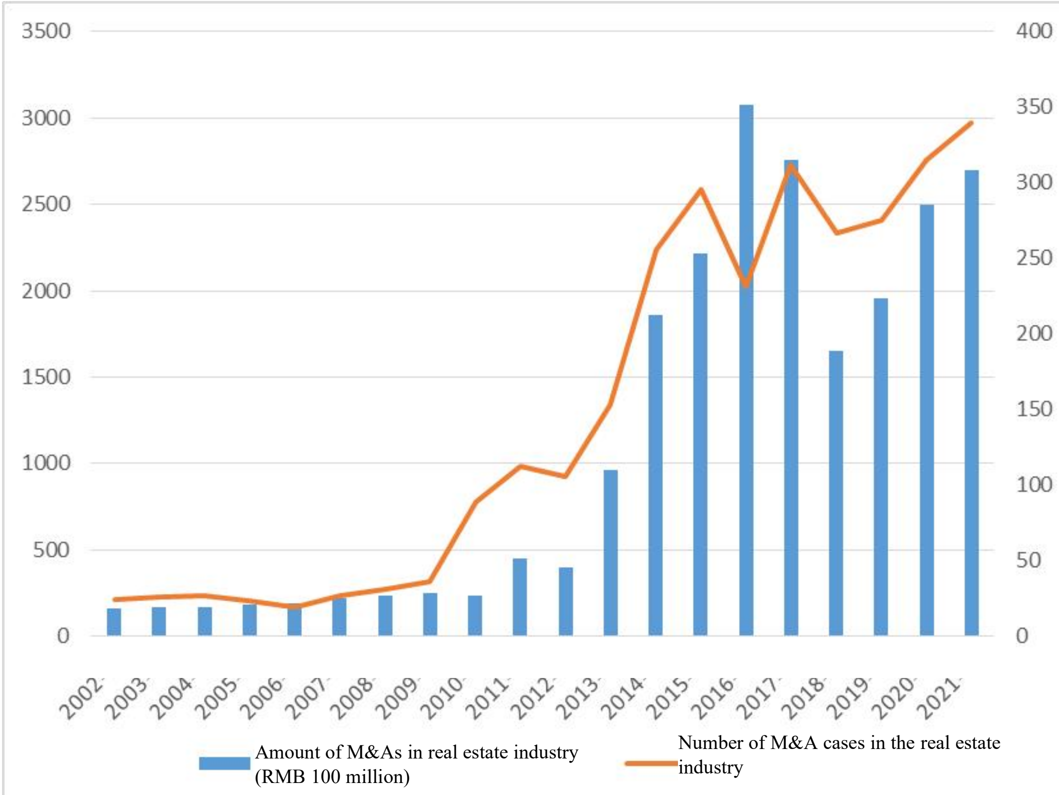


Figure 3-6 Statistical chart of the number of M&A and M&A amount in China's real estate industry (2002-2021)

Source: Wind Financial Data (2000-2021)

3.3.2 M&A types. (2) Types of M&As

However, due to the particularity of the real estate industry, land resources and capital resources are the two basic elements to maintain the operation of enterprises, and they are also the core foundations that restrict the operation and development of enterprises. M&As among large real estate developers are becoming more and more frequent, such as Sunac's M&A of Wanda, Vanke's M&A of GLP, Evergrande's M&A of Vanke, etc. More and more large real estate developers are exploring M&A in the same industry to achieve mutual exchange of capital resources and land resources to reorganize resources, which also increases horizontal M&As in China's real estate industry. Through the analysis of the types of mergers and acquisitions of real estate companies in 2019 (as shown in Figure 3-7), it can be seen that horizontal mergers and acquisitions occupy an absolute leading position in China's real estate industry mergers and acquisitions.

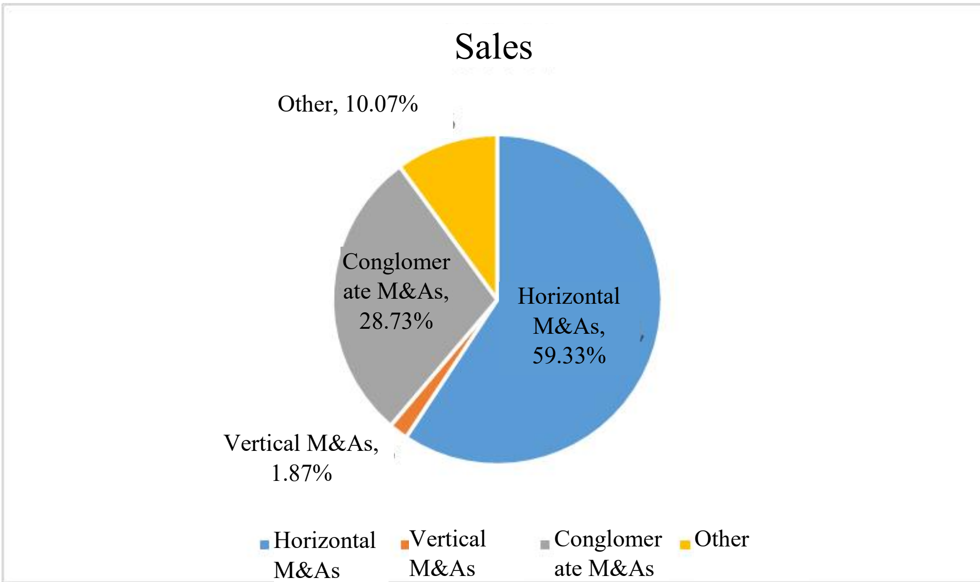


Figure 3-7 Statistics on M&A types in China's real estate industry in 2019

Source: Wind Financial Data

Based on the above chart, we can see that, in addition to horizontal M&As, conglomerate M&A has gradually become a more popular way for real estate developers in China. It indicates that under the continuous tightening of national regulation and control and downturn of the industry market, exploring enriched business, finding new profit growth drivers and seeking diversified business development have gradually become a strategic choice for most real estate developers. An increasing number of large real estate developers are diversifying their business to different degrees, mainly into different business fields related to real estate business, such as hotels, department stores, cinemas and industrial funds, etc. Others like China Resources and China Overseas have also ventured into the field of trust investment.

3.3.3 The uniqueness of M&As by real estate companies compared to M&As in other industries. (1) Acquiring land and capital is the main purpose of M&As

Land reserves and disposable capital are the two important production factors for the continuous operation of real estate companies, and the most important resources that restrict their economic growth. Since the source of good land parcels has become increasingly scarce after several years of rapid growth in the domestic real estate industry, and the model of land acquisition through bidding, auction, and listing is relatively costly and simple, more and more large and medium-sized real estate companies are inclined to acquire land through M&As with relatively lower costs and more room for operation. This has also become an important way for many real estate companies to expand rapidly. In addition, after the promulgation of the "New Eight Measures of the State" in 2011, the Chinese government has strengthened its efforts to deal with idle land in cities. Some small companies that have land resources but insufficient capital for development also tended to seek external partners by acquisitions in order to maximize their corporate benefits. At the same time, we can find more and more intensive M&As among real estate giants from 2015. The cooperation between Vanke Film Holding Co., Ltd. and SUNAC, the cooperation between Qingdao Hengxing University of Science and Technology and Wantong Group Holding Company, and the cooperation between Vanke Group Holding Company and Prius, the logistics and real estate giant, are essentially exchanges of land resources and capital resources between them. Moreover, driven by the demand for funds and financing channels, many large real estate companies have introduced commercial banks, insurance and other institutions or financial institutions as their strategic investors.

(2) Mainly horizontal M&As

The data shows that among M&As in the real estate industry, horizontal M&As occupy an absolute dominant position in both the number and the value of transactions. On the one hand, real estate development is highly professional, so professionals are required for site selection and positioning, planning and design, engineering construction, and marketing planning. At the same time, real estate development also requires strong local network resources. Therefore, large and medium-sized real estate companies regard the acquisition of local real estate companies in the target area as the most effective and convenient way to quickly enter the target market and acquire local professionals. On the other hand, the data also show that the market concentration of the real estate industry in China has become higher and higher, which also shows that real estate companies hope to expand their market share and improve their market position through horizontal M&As.

(3) Large value of M&A and high risks

M&As between real estate companies usually include large cash transactions in addition to asset or share swaps of the parties involved. For M&As involving large values from billions to tens of billions of yuan, the buyers often have to raise a large amount of funds through the financing market, including by issuing additional shares, issuing convertible bonds, mezzanine financing, bank loans, trust products, etc. Such M&As involving huge values not only magnify the investment risk of the buyers, but also increase the debt ratio and cash flow pressure of the buyers, which constitutes a very high operating risk. In addition, the real estate industry has long development and construction cycle, is greatly influenced by macro policies, occupies high proportion of capital, and has long repayment cycle. These characteristics determine that the M&A funds of the buyers will only flow back after a considerable period of precipitation. How to control the fund risk during the precipitation period is also an important consideration factor.

3.4 Motives and main modes of M&As of Chinese listed real estate developers

3.4.1 Motives. (1) Acquire land resources

Land resources are the basis for the survival and development of real estate developers and land resources are scarce and territorial. Under the situation that there is a single channel of land supply and the number of supply is gradually decreasing, the cost of acquiring land through open market bidding is getting higher and higher. The management of China's land market is to be standardized. In some cities, real estate developers with relationship can obtain very high-quality and scarce land resources regardless of their size, while those large real estate developers with high professional development level cannot in this regard. For large real estate developers, acquiring land resources from smaller companies through M&As and project equity acquisitions has become a cost-effective shortcut. Some small real estate developers are unable to develop projects on their own due to lack of strength and capital and their land will repossessed by the government if they do not develop it within two years, so they also choose to develop with large companies.

(2) Widen financing channels

China's real estate finance development is relatively lagging behind and the financing channels for real estate development are limited. The sources of funds for real estate development in China mainly include bank loans, self-financing, real estate investment trusts, listed financing and foreign capital. For a long time 60% funds are from banks including real estate development loans and pre-paid mortgage loans. With the adjustment of the national macro policy, the tightening of banking funds, it is more and more difficult for real estate developers to obtain loans from the bank and they have to broaden the financing channels. Small and medium-sized real estate developers have land and projects in hand but cannot afford to develop them, so they will actively cooperate with some large companies enjoying good credit in the capital market either in M&A or equity sales, so that small companies can get financing and large ones get projects. Listing is a very important financing channel, but its threshold in China is very high and the China Securities Regulatory Commission also adopts a strict approval policy for IPO of real estate developers. While it is much less difficult to list by buying a shell company, so many large real estate developers with strength will choose to go public by way of merging and acquiring shell companies.

(3) Expand business in new regions

The real estate industry is highly regional and the economic environment and policy environment vary from region to region, which has a great impact on the nationwide expansion of large real estate developers. At the same time, the real estate industry is cyclical and volatile. To reduce the impact of industry cycle fluctuations, large real estate developers will choose to develop across regions as the economic development level in different regions is not the same and the real estate industry may be at different stages of development in different regions during the same period. When a real estate developer enters a new city, the relationship between the company and the government, the influence of the company's brand and the company's knowledge of the market are all important and tricky issues, so M&A of excellent local companies becomes an important choice for many developers in this regard. Vanke's M&A of Zhejiang Nacity in 2006 is a typical example. Vanke had no presence in Zhejiang. Vanke could set up a branch to enter Zhejiang directly, but it would have more benefits to enter Zhejiang market through the M&A of Nacity. Nacity has a leading position in Zhejiang real estate industry, strong brand appeal among consumers, rich government connections and a lot of land reserves, so we can see that Vanke's M&A is the best choice to enter Zhejiang market and this move becomes a model of M&A in real estate industry.

(4) Imbalance of industrial structure promotes the increase of industry concentration

The real estate industry is developing rapidly. The number of companies has increased from 27,303 in 2000 to 97,937 in 2018, more than tripling the number of companies in just less than two decades. The increase of competitors in the same industry and the unpredictable market competition have advanced the integration progress in the industry. Those who are inefficient and lack of resilience are eliminated, either by M&As or by withdrawal, while those who are of high quality integrate their superior resources by acquiring and merging those who are eliminated to improve the overall competitiveness, thus maintaining their growth capacity and operational vitality.

This paper conducted a statistical analysis of the concentration degree of the top 100 real estate developers in China from 2014 to 2018 as shown in Table 3-4 and Figure 3-8 below. They show that the market shares of the top 10, top 20, top 50 and top 100 real estate developers in China in the past five years have shown a trend of linear increase year by year and the growth momentum has been more rapid after 2016. The market share of the top 100 companies has been more than half since 2017 and the top 50 companies occupied half of the market share by 2018, an increase of 20.04% year-on-year and an increase of 76.6% compared to five years ago in 2014. The expansion of market share of large real estate developers accelerates and the industry concentration degree further improves.

Table 3-4 Concentration degrees of top 100 real estate developers in China from 2014 to 2018 (by the sales of commercial properties)

	2014	2015	2016	2017	2018
National sales volume of commercial properties (RMB 100 million)	76293.53	87279.99	117637.24	1337000.28	149971.68
Percentage of top 10 real estate developers (%)	16.91	17.13	18.74	24.57	27.01
Percentage of top 20 real estate developers (%)	22.84	23.16	25.30	32.49	37.49
Percentage of top 30 real estate developers (%)	31.23	32.17	35.34	45.92	55.14
Percentage of top 100 real estate developers (%)	37.78	40.03	44.79	55.52	66.74

Souce: arranged based on data available

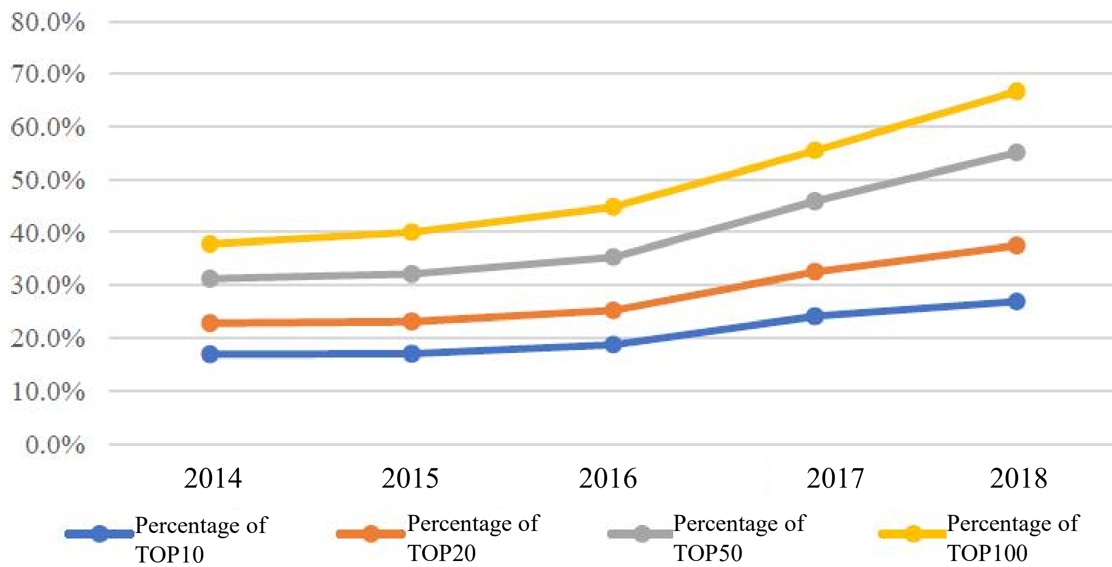


Figure 3-8 Trend of concentration degree of Top 100 real estate developers in China from 2014-2018

(Souce: arranged based on data available)

(5) Government promotion to form large company groups

The Opinions of the State Council on Promoting M&As released in 2010 emphasized that various government agencies shall strengthen coordination and solve policy obstacles for M&As. In 2014, it was also clearly proposed to advocate the optimal allocation of resources through M&As, support market-oriented M&As and propose to broaden financing channels for M&As and solve financing problems in M&As, so that companies involved can have enough cash flow to seize M&A opportunities and achieve their M&A goals and give strong policy support to M&As; in 2015, the Central Economic Work Conference also proposed to promote and support M&A and reorganization among real estate developers to de-stock and improve the industry concentration degree; the CSRC subsequently simplified the review process of M&A and restructuring and gave great convenience in supervision. These policies are conducive to the development of M&A, creating a more relaxed environment for M&As among real estate developers, which directly contributes to the increasing frequency and stability of M&As among real estate developers.

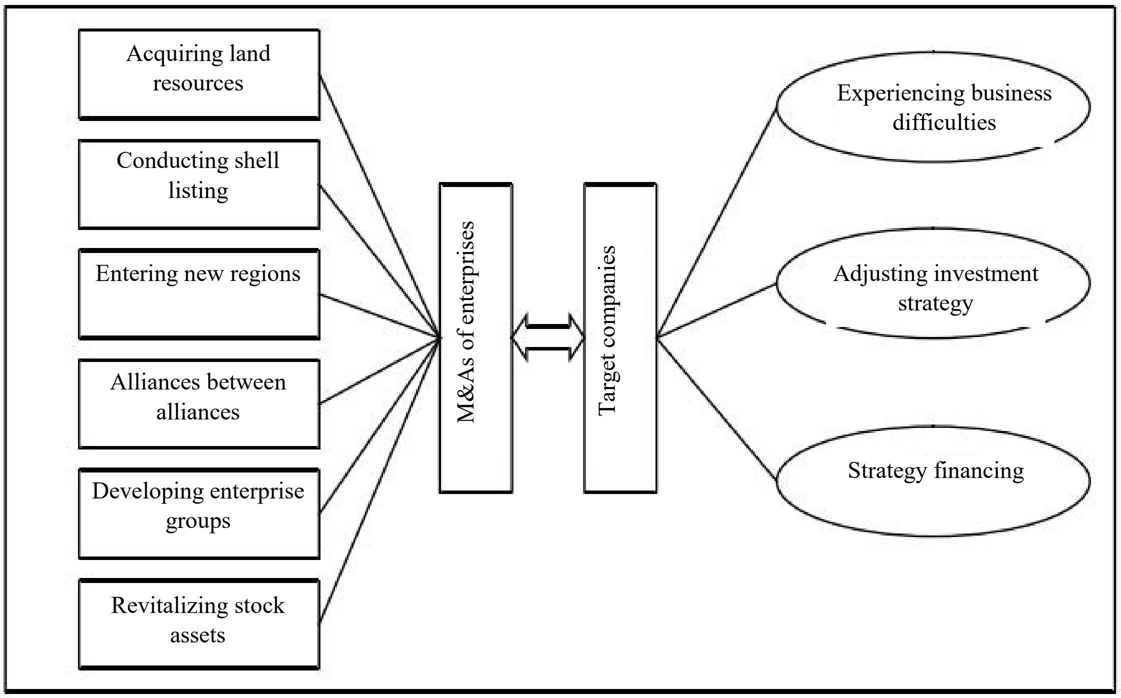


Figure 3-9 Analysis of M&A motives in China's real estate industry

3.4.2 Main M&A modes of listed real estate developers in China. M&As can be divided into different modes by different criteria, including horizontal M&As, vertical M&As and conglomerate M&As according to the industries which the parties operate; own funds, debt acquisition, asset swap, equity swap and mortgage M&As according to the terms of payments or financial M&As and strategic M&As, etc. according to the M&A level. Since the real estate industry has certain special characteristics, this paper classifies M&As into five models according to the strategic purpose and implementation effect: expansion M&As, strategic cooperation M&As, shell listing M&As, resource reorganization M&As and the entry into the real estate industry M&As.

(1) Expansion M&As

Expansion M&As are the most common type of M&A in China's real estate market at present. According to the market power theory and profit maximization theory, when a company gets a foothold in the real estate industry, it will choose to expand rapidly, growing stronger in its own cities and entering new regions. One of the best ways to achieve business expansion is to start M&As of small and medium-sized real estate developers, which can both rapidly expand their strength and eliminate potential competitors. Expansion M&As are usually carried out between large companies and SMEs. According to the annual report of Vanke, an M&A professional, Vanke acquired 14 real estate developers in 2010, with an average of one real estate developer being incorporated into Vanke every 15 days, while the total amount paid was only RMB2.219 billion. Vanke acquired 27 and 18 real estate developers at a cost of RMB 1.8 billion and RMB 3 billion respectively in 2009 and 2008. We can see that expansion M&As are frequently conducted at fast pace and involves relatively small amount.

(2) Strategic cooperation M&As

Unlike expansion M&As, where the large companies eat the small ones, strategic cooperation M&As generally occur between larger and stronger companies with complementary strengths. Due to the different development strategies and historical backgrounds, major companies often have different strengths and weaknesses and different performance in terms of financial status, land resource reserves, bank credit status, brand competitiveness, operational management ability and government public relations ability, which affect the core competitiveness of real estate developers, so that they can complement each other through strategic cooperation through M&As. In June 2012, Sunac Real Estate and Greentown China announced the formation of a high-end real estate cooperation platform, Shanghai Sunac Greentown Holdings Limited, in which Sunac and Greentown each hold 50% of the shares. Sunac will pay RMB 3.372 billion as consideration for the partnership, while Greentown will inject its equity in 9 high-quality property projects located in Shanghai, Suzhou, Wuxi and Tianjin into the company.

In April 2004, Tianjin TEDA became the largest shareholder of Beijing Vantone by acquiring all of the 308 million shares issued by Vantone. Beijing Vantone is a nationally renowned professional real estate developer with rich experience and strong brand competitiveness in real estate development and operation. Tianjin TEDA is a large state-owned company in Tianjin with strong financial strength and abundant land reserve, but it has no experience in real estate operation, so through the M&A, both parties can complement each other's advantages and win-wins.

(3) Shell listing M&As

At present, China's real estate developers have narrow financing channels and unreasonable financing structure, with the proportion of bank funds exceeding 60%, which brings greater risk to the healthy development of the real estate industry and the financial security of China. Therefore, many real estate developers have turned their attention to listing, which cannot only provide a stable and smooth financing channel but also promote standardized management and improve brand influence if successfully listed. However, the CSRC is very strict in approving the listing and it is difficult for real estate developers to be eligible for listing due to the large fluctuation of cash flows.

Therefore, many companies choose indirect listing through the purchase of shell resources of listed companies with poor performance. At present, there are generally three modes of shell listing for real estate developers: directly acquiring the controlling stake of the shell company, subscribing for the shares of the shell company with the equity of its own real estate developer, i.e. to use the opportunity of refinancing of the shell company and going shell listing by restructuring the ST company. At present, there are many cases of shell listing of real estate developers, such as Beijing Vantone vs Xianfeng, Beijing Winfirst vs ST.EDENWEISS, Hangzhou Sundy vs ST Baike, Jinke vs ST Dongyuan, etc.

(4) Resource restructuring M&As

Resource restructuring M&As are, unlike the above three types, spontaneous market behaviors, but a government-driven M&A restructuring among state-owned real estate developers. Chinese government controls a large number of large state-owned companies and centralized real estate developers have great influence in the real estate industry. Central companies shoulder a major social responsibility and do not only pursue profit maximization. To preserve the value of state-owned assets and shoulder the social responsibility of state-owned companies in line with government economic policies, SASAC often has to restructure the resources of centralized real estate developers under different macro policy environments and in different economic development situations. For example, in January 2005, 1.6 billion of real estate assets were transferred from China Huaneng Group Co., Ltd. to China Real Estate Development Corporation for free in order to separate the main and secondary businesses and improve competitiveness. In order to cool down the overheated real estate market, 78 central companies that do not have real estate as their main business were announced to withdraw in March 2010 from the real estate market and their real estate assets were reorganized by 16 central companies.

In summary, in the current real estate industry, small and medium-sized real estate developers provide land and large real estate developers provide capital and brand. The real estate industry is bound to go through a "big wave" of the integration process in the future. This paper believes that the real estate developers that can survive are mainly two types: large real estate developers having a large scale, excellent brand and strong strength and medium-sized real estate developers that have strong product or regional characteristics and strong ability in these areas to occupy a region with clearly differentiated product brands.

3.5 Analysis of factors influencing horizontal M&A performance in China's real estate industry

M&A between companies is not a simple transaction that can be completed by signing a contract, but an economic activity that sometimes takes several years. During this period, the acquirer has to find and examine the target company, prepare accounting and legal documents and integrate resources after the M&A is completed, so there are many factors that affect the success of M&As.

3.5.1 Influencing factors prior to M&As. The acquirer must select the target company according to its objective. For example, to expand market share, a company in the same industry should be selected for horizontal M&A; to play a synergistic effect, a upstream and downstream company of the industry chain should be selected for vertical M&A; to be listed in a shell, a shell company with poor business performance and low price should be selected. At the same time, the acquirer need to consider the size and solvency of the target company; otherwise it will get a pile of bad assets.

(1) Scale of the target’s assets

When choosing a target company for M&A, the acquirer must combine its actual conditions and its purpose and avoid blindly choosing a company with too large assets. Generally speaking, companies with large assets need high merger costs and expenses and the benefits of M&As will be seriously affected by the M&A cost, or even the acquirer has to cover the debt by bankruptcy. In addition, it is not easy for the acquirer to integrate a target company with too large asset size and to quickly generate cash flow and M&A benefits, which often drags down the financial efficiency of the acquirer and has far-reaching effects.

(2) Target company's profit

In selecting M&A target companies, the acquirer must strictly examine the target company's ability to earn profits, not only to see the size of profits, but also to see the profit structure. The size of the profit determines the structure of the profit, which can tell whether the target company's profit is brought by the primary business income or obtained by selling assets and government subsidies. All acquirers want to buy a company with good gross profit performance, not the one that relies on non-operating income. In addition, when examining the target company's profits, it is important to check whether the profits are real and whether they bring in a net inflow of operating cash. If the profits are brought in by excessive accounts receivable, they are false and require extra attention.

3.5.2 Influencing factors in M&As. Factors that may affect M&A performance at this stage are M&A connected transactions, M&A costs and M&A terms of payments.

(1) Related party transactions

M&A restructuring between parent company and subsidiaries is a connected transaction, which has significantly different effects on both sides. For example, if a parent company purchases an asset from a subsidiary at a higher cost, the real purpose may be to provide working capital for the subsidiary and support its development in disguise and the high asset price also involves profit transfer, which may harm the interests of shareholders. Moreover, that a parent company purchases a high-quality asset from a subsidiary at a lower cost may be designed to help the parent company improve its operation. Therefore, connected transactions in M&A can have different impacts on both parties.

(2) M&A costs

M&As inevitably incur costs and the success or failure of an M&A is often determined by whether or not the costs paid for the M&A are too high. From the perspective of the acquirer, paying too high M&A costs will drag down its operating cash flow, which is not conducive to its normal business activities, as integration of resources in the short term will not bring significant income to the acquirer. In terms of the target company, high M&A costs mean a high valuation and a high return to shareholders, but one must also be wary of the negative impact of a betting agreement that will result in large compensation if the target fails to achieve the promised profits. Therefore the best M&A must be the one of a target company with a reasonable valuation at the most reasonable costs.

(3) Payment methods of M&A

Since the M&A cost is very high, the terms of payment is very important. Different terms of payments affect the cash flow of the company, which in turn affects the solvency and normal operating activities and thus has an impact on the profit and the stable development of the company. Common terms of payments for M&A are monetary funds, or monetary funds combined with marketable securities. The real estate industry is a capital-intensive industry and the strict state regulation of the real estate industry has led to the cash flow management of real estate developers being more important than that of general companies. Therefore, real estate developers are recommended to use more securities to pay and less money to save money.

3.5.3 Influencing factors after M&As. An M&A transaction is only part of an M&A and the subsequent integration of M&A resources is the key to determine the success or failure of the M&A. After the M&A, the resources from two different companies come together, which may create synergy or conflict. A successful M&A with resource integration will bring positive shareholder returns, while a failed M&A with resource integration will only harm the interests of the acquirer.

Resource integration generally includes financial integration, management integration, human resources integration and cultural integration. Financial integration is the agreement of the financial system of both companies and the arrangement and planning of capital allocation and financing needs, in order to reduce financial costs and maximize financial benefits. Management integration is the integration of the company system. The surviving company should have a consistent management system to ensure its normal and effective operations. Human resources integration is to reasonably arrange the personnel structure of both parties, retain talents, eliminate redundant personnel and ensure the consistent centripetal force of all employees. Cultural integration is to find out and retain the cultural commonality and eliminate the cultural dissimilarity between the two companies, which is conducive to enhancing cohesiveness and competitiveness.

CHAPTER 4

CONSTRUCTION OF HORIZONTAL M&A PERFORMANCE EVALUATION SYSTEM OF CHINESE LISTED REAL ESTATE DEVELOPERS

M&A performance is a direct feedback on the results of M&A. Whether the post-M&A company can achieve the expectations of the M&A implementers and the degree of influence of the company by the M&A are important to the stakeholders such as the M&A implementers and real estate developers have different industry characteristics and background from other companies, so the evaluation of their M&A performance also has different characteristics from others. This paper constructs an evaluation system of M&A performance of real estate developers based on the main motives of real estate developers in China and analyzes the impact of M&As on the achievement of M&A goals and performance of real estate developers with the aid of case studies.

4.1 Evaluators, evaluation contents and objectives of horizontal M&A performance of Chinese listed real estate developers

4.1.1 Evaluator. The evaluator is essentially the choice of evaluation perspective, that is, who evaluate M&As. M&As are often closely related to many stakeholders and the different concerns of different stakeholders determine the different evaluation results of M&A performance. This paper argues that M&A motives of the real estate developers is that M&A is essentially a strategic act for their development and their shareholders and operators are the initiators, as well as the biggest stakeholders.

Therefore, this paper takes the shareholders and operators of real estate developers as the evaluators of M&A performance and analyzes M&As from two perspectives: short-term performance and long-term business performance.

4.1.2 Evaluation content. The evaluation content is the content of evaluation and the evaluator determines the evaluation content. As mentioned above, the shareholders and operators of real estate developers are evaluators of M&A performance, so the long and short term performance that the shareholders and operators are concerned about is the content to be evaluated in this paper, that is, the evaluation content.

4.1.3 Evaluation objective. The evaluation objective is the effect that the evaluator wants to achieve through the evaluation of the evaluation content t. This paper regards the shareholders and operators of real estate developers as the evaluators and the shareholders' wealth and business performance are the evaluation contents, while the evaluation objectives are to study the degree of influence of M&A of real estate developers on the shareholder wealth and business performance and whether the M&A motives of real estate developers are realized. Specific targets are as follows:

First, to investigate whether the M&A creates wealth for shareholders and to examine whether shareholders gain short-term wealth accumulation as a result of the M&A through the reaction of market investors to the M&A.

Second, to probe into the impact of M&A on business performance, to identify the risks of M&As and to analyze the changes in business performance from multiple perspectives.

Third, to get to know whether the overall M&A performance meets the M&A motives of the M&A implementers and achieves the effect expected by the acquirer.

4.2 Design principles of horizontal M&A performance evaluation system of Chinese listed real estate developers

(1) Goal consistency

Evaluation indicators to be selected for real estate developers' M&A performance must be consistent with the objectives of the M&A initiators and fully reflect the realization of M&A motives.

(2) Comprehensiveness

Evaluation indicators to be selected for real estate developers' M&A performance should be balanced and complementary as possible, taking into account both financial and non-financial indicators and trying to reflect the M&A results and efficiency in a comprehensive and complete manner from both quantitative and qualitative perspectives.

(3) Operability

Evaluation indicators to be selected for real estate developers' M&A performance should be available and easy to implement, not involving unavailable internal information and the index information can be obtained through public means such as announcements of listed companies and financial information networks.

4.3 Framework design of horizontal M&A performance evaluation system of Chinese listed real estate developers

4.3.1 Short-term performance of M&As - shareholder wealth effect. This paper adopts the event study method to examine the market reaction before and after the announcement date of the M&A and calculates the daily excess return rate and the cumulative excess return rate during the event window period, which are used to measure the impact of the M&A and examine the impact of the M&A on shareholder wealth.

4.3.2 Long-term performance of M&A - business performance. In this paper, we select representative financial and non-financial indicators to study the long-term business performance of real estate developers after M&A.

(1) Selection of financial indicators and description thereof

This paper focuses on the impact of M&As on the business performance and evaluates from four perspectives: solvency, growth, operational capacity and profitability. Solvency analysis effectively reflects the new liabilities of the company due to the M&A, which can fully reflect the potential financial risk of the company and is particularly important for real estate developers with high debt ratio; growth capability analysis reflects the impact of the M&A on the scale of assets and development capability of the company, which can fully reflect the expansion of the scale of the real estate developer by the M&A The profitability index is a direct response to the performance of M&A. For real estate developers, the purpose of driving M&A behavior may be different, but all of them have the ultimate goal of improving the profitability of the company. The analysis of these indicators will provide a comprehensive picture of the value-added capability of the companies after the M&A. In order to better illustrate the selection of the above financial indicators, Table 4-1 below provides an overview of the specific indicators selected, their calculation methods and their implications from the above four perspectives.

Table 4-1 Financial Indicator Framework

Evaluation details	Indicator name	Indicator calculation methodology
Solvency	Current ratio	Total Current Assets/Total Current Liabilities
	Asset-liability ratio	Total Liabilities/Total Assets*100%
Growth capacity	Growth rate of main business revenue	(Revenue from main business of the current period - revenue from main business of the previous period) / revenue from main business of the previous period *100%
	Net profit growth rate	(Net profit for the current period - net profit for the previous period / net profit for the previous period) *100%
	Total capital growth rate	(Total assets for the current period - total assets for the previous period) / total assets for the previous period *100%
Operating capacity	Inventory turnover	Revenue from main business / Average total inventory = Revenue from main business / (Total inventory at the end of the period + Total inventory at the beginning of the period) /2
	Total assets turnover rate	Income from main business / average total assets = Income from main business / (total assets at the end of the period + total assets at the beginning of the period) /2
Profitability	Profit margin from main business	Profit from main business / Revenue from main business *100%
	Return on net assets	Net profit / average total owner's equity = net profit / (total owner's equity at the end of the period + total owner's equity at the beginning of the period) /2
	Return on total assets	Net profit/average total assets = net profit/(total assets at the end of the period + total assets at the beginning of the period)/2

Table 4-2 Connotation and meaning of financial indicators

Indicator name	Connotation and meaning of indicators
Current ratio	The higher the value of the indicator, the stronger the ability of the real estate developer to liquidate its current assets, the stronger the ability to repay its liabilities in the short term and the lower the risk of capital chain breakage.
Asset-liability ratio	The higher the value of this indicator, the higher the financial risk of the company, the higher the possibility of insolvency and overall collapse.
Growth rate of main business revenue	This indicator can be used to measure the product life cycle of a real estate developer and determine the stage of development of the company. Reflects the degree of expansion of the main business revenue of real estate developers after M&As
Net profit growth rate	It is an important indicator for measuring the performance of a real estate developer's asset operation and management, as well as its growth and development capability.
Total capital growth rate	This indicator indicates the speed of expansion of a company's assets over a certain period of time. The larger the value of this indicator, the greater the increase in the scale of assets acquired by real estate developers through M&As
Inventory turnover	It is one of the key indicators that affects the business performance of real estate developers, as it reflects the speed of converting inventories into profits, i.e., the efficiency of the utilization of inventories of raw materials and finished products and the occupancy of inventory funds. The higher the value of the indicator, the stronger the inventory turnover capacity of real estate developers
Total assets turnover rate	This indicator examines the operating efficiency of all assets of a real estate developer, the speed and utilization efficiency of all assets of a real estate developer from input to output and affects the overall operating ability of the company.
Profit margin from main business	This indicator reflects the scale and development of the main business of the company, i.e. the higher the indicator, the stronger the market competitiveness of the main business of the real estate developer and the higher the profit level of the real estate business
Return on net assets	The higher the value of this indicator, the stronger the profitability of the shareholders' equity of the real estate developer and the more efficient the use of shareholders' capital, which is an important indicator of the profitability of the shareholders of the real estate developer
Return on total assets	It is an important indicator of the profitability of the shareholders of real estate developers, which directly reflects the overall competitive strength and development ability of real estate developers. The larger the value of this indicator, the stronger the profitability of the total assets of real estate developers

(2) Selection of non-financial indicators and description thereof

Due to the limitations of many factors, the study of M&A performance of real estate developers only through the analysis of financial indicators is inevitably not comprehensive and accurate and cannot measure whether the special M&A objectives and behavioral purposes of real estate developers are met and the evaluation results are inevitably one-sided. In order to evaluate the results and efficiency of real estate developers' M&A behavior in a more comprehensive way.

First, we examine the new land reserves of real estate developers through M&A. For real estate developers, land reserve is an important resource indispensable for production and operation. In recent years, the government of China has imposed many restrictions and regulations on the acquisition of land by real estate developers and the price of land has been rising. The acquisition of land resources has become the primary starting point for most real estate developers to carry out M&A. Therefore, it is particularly important to examine and study the situation of land resources, which can directly reflect the realization of the initial purpose of real estate developers.

Secondly, to measure the change of market share of real estate developers before and after M&A. For real estate developers, the strategic deployment of their businesses through M&A is another key motive for implementing M&A and the results achieved by real estate developers through M&A are ultimately reflected by the market share of real estate developers.

Therefore, this paper is able to examine and evaluate the M&A performance of real estate from the perspectives of shareholder wealth and long-term business performance and to reflect the satisfaction of the motives of real estate developers to conduct M&As.

CHAPTER 5

AN EMPIRICAL STUDY ON THE SHORT-TERM PERFORMANCE OF HORIZONTAL M&AS ON CHINESE LISTED REAL ESTATE DEVELOPERS

5.1 Research Method

5.1.1 Selection of research methods. At present, the methods of measuring M&A performance include the event study method, the financial indicators method, the case study method, the questionnaire method and the balanced scoring method. The case study method is to investigate and study a specific individual phenomenon and analyze the causes of this phenomenon. It is neither inductive nor universal and lacks the abstraction and streamlining of theories. Investigation and study methods, such as the questionnaire method and the interview method, analyze and summarize a problem through direct collection of data. They are often applicable to the study of past problems. They have problems such as high data collection cost, inaccurate information and lack of theoretical support. The balanced scoring method is to select a variety of indicators including financial, non-financial, internal and external indicators to establish an evaluation system for scoring. The study through such method is limited due to the difficulty in establishing an indicator system and the fact that many indicators cannot be quantified.

First introduced by Ball and Brown in 1968, the event study method mainly calculates the excess return based on how much a company's stock price reacts to a particular event before and after the disclosure of a particular event to examine the extent to which the company reacts to the event and to measure the change in the value of the company. The method is based on an efficient market hypothesis, which holds that the stock price can reflect all the information about a company, including the impact of past, present and even future events on the value of the company. An efficient market can be divided into three forms: a weak efficient market, a semi-strong efficient market and a strong efficient market. In all these three forms of market, stock prices contain different information, including all historical information, all public company information, and all public and non-public information, so investors are less likely to be able to use additional or insider information to gain excess returns.

Chen Xiao, Chen Xiaoyue and Liu Zhao (1999), Qian Minyi and Chen Yunmei (2014) and other scholars have studied the effectiveness of China's stock markets, and have drawn rich conclusions that China's stock markets have reached the weak and effective level. With the development and deepening of China's equity division reform, the stock markets have made further progress and various systems have been continuously improved. Therefore, in combination with the above research results and the development of China's stock markets,

The author thinks that China's stock markets meet the weak and effective conditions, and stock prices and returns can reflect the impact of certain events on the value of companies, so prerequisites for using the event study method are available. Therefore, based on the above reasons, after comparing these study methods for M&A performance, this paper chooses to use the event study method to study the short-term M&A performance of real estate developers and use the financial indicators method to study the long-term M&A performance.

5.1.2 Procedure of the event study method. (1) Determination of events

This paper focuses on M&A performance, so the events are the M&As of listed real estate companies.

(2) Determination of the event period

An event period includes a window period and an estimation period. The window period refers to a period during which particular events have an impact on the stock prices of sample companies, i.e. the study period. The estimation period is a period during which stock prices are not affected by any particular event, and it does not overlap with the window period and aims at determining the sample companies' normal returns in the absence of a particular event.

(3) Parameter estimation of α、β

The market model is based on CAPM, which takes into account the impact of market factors and other differential factors on the stock return and is more comprehensive. Therefore, the market model method adopted in this paper is used to estimate the parameters of the sample companies. The formula is as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{5-1}$$

Where, R_{it} is the stock return of Company i on Day t; R_{mt} is the return of corresponding market index on Day t; α_i is the average return that cannot be explained by market factors; β_i is the sensitivity of the individual stock to corresponding market index, i.e. the market risk factor; ε_{it} is a random error term. First, collect the prices and indices of the sample companies and the corresponding market in the whole event period, and calculateR_{it}, R_{mt}thereof. Then the relevant data in the estimation period are brought into CAPM, and the stock's risk α_i and the systemic risk β_i are calculated by linear regression.

(4) Calculation of the expected normal return

The expected normal returns of the sample companies are calculated by bringing the relevant data in the window period into the following formula in combination with the estimated values of α_i and β_i.

$$\hat{R}_{it} = \alpha_i + \beta_i R_{mt} \tag{5-2}$$

Where, $\hat{R}_{it}$ is the expected normal return of Company i on Day t; α_i and β_i are the estimated parameters; R_{mt} is the return of corresponding market index on Day t.

(5) Calculation of the excess return and the cumulative excess return

The actual return of a sample company during the window period minus its expected normal return is the individual stock's excess return, and the individual stock's cumulative excess return can be further obtained. The calculation formula is as follows:

$$AR_{it} = R_{it} - \hat{R}_{it} \tag{5-3}$$

$$CAR_{it} = \sum_{t} AR_{it} \tag{5-4}$$

Where, AR_{it} is the excess return of Company i on Day t, and CAR_{it} is the cumulative excess return of Company i on Day t. Based on this, we can calculate the average excess return and the average cumulative excess return of the total samples. The calculation formulas are as follows:

$$AAR_t = \frac{1}{N}\sum_{t} AR_{it} \tag{5-5}$$

$$CAAR_{it} = \sum_{t} AAR_{it} = \frac{1}{N}\sum_{t} CAR_{it} \tag{5-6}$$

In the above formulas, AAR_t is the average excess return on Day t of the total samples, and $CAAR_{it}$ is the average cumulative excess return on Day t of the total samples.

(6) T-test on AAR_t and $CAAR_{it}$

To verify whether the excess returns of the sample companies are all due to the impact of M&As events, we need to perform a t-test on AAR_t、 $CAAR_{it}$ and to verify whether the excess returns are 0 at the corresponding significance levels.

Hypothesis 1: Original Hypothesis H0: $AAR_t = 0$; Alternative Hypothesis H1: $AAR_t \neq 0$

Hypothesis 2: Original Hypothesis H0: $CAAR_{it} = 0$; Alternative Hypothesis H1: $CAAR_{it} \neq 0$

The construction statistics are as follows:

$$t_{AAR} = \frac{AAR_t}{S(AAR_t)/\sqrt{n}}, \quad t_{CAAR} = \frac{CAAR}{S(CAAR_t)/\sqrt{n}}$$

Among them:$S^2(AAR_t) = \frac{\sum(AR_{it} - AAR)^2}{n-1}$; $S^2(CAAR_t) = \frac{\sum(CAR_{it} - CAAR)^2}{n-1}$

A single-sample t-test is performed on the cumulative average excess return. If Original Hypothesis H0=0 is rejected and $CAAR_{it}$ <0, it indicates that the M&A has a negative impact on the stock return and decreases the company's value; if Original Hypothesis H0=0 is rejected and $CAAR_{it}$ >0 is rejected, it indicates that the M&A has a positive impact on the stock return and increases the company's value; if Original Hypothesis H0=0 is accepted, it indicates that the M&A has no impact on the stock return.

5.2 Study sample selection and data sources

5.2.1 Screening of research data. In an empirical study, data are the basis, and data are often complex and some are even false. Such data will lead to the inaccuracy of the research results, so data need to be screened before a study. This paper screens the data as follows: (1) the acquirers and the targets are all selected from Chinese A-share listed real estate companies; (2) screen out the listed real estate developers with delisting risk, namely "ST" enterprises; (3) exclude enterprises with irregular disclosures of annual financial statements; (4) screen out listed real estate developers that have not completed the M&As, and (5) screen out listed real estate developer that have material events in a specific period before or after the M&A announcement date. After the above screening, this paper selects 24 Chinese A-share listed real estate companies with horizontal M&As in 2016, including 11 listed on the Shenzhen Stock Exchange and 13 listed on the Shanghai Stock Exchange.

5.2.2 Data sources of the study panel.. The event study method is to study changes in the cumulative return caused by stock price movements during a specific period before and after the M&A announcement date, which is commonly known as the event window. The counterpart to the event window is the estimation window, which uses the sample's historical data to estimate the normal return of the sample when it is not affected by the M&A. The cumulative abnormal return of the sample company during the event window can be estimated from the actual return during the event window and the expected return during the estimation window.

The samples of real estate developers with M&A events, stock transaction data and index data selected for this paper are collected and sorted through the Guotaian

CSMAR database. In 2016, 87 listed real estate companies had M&As, including 34 with horizontal M&As. The event study method is used to study the short-term performance of real estate developers in horizontal M&As. In order to maintain the consistency with the long-term performance data studied in Chapter 5 (the long-term performance data are data in 2015, the year before the M&A; 2016, the year of the M&A; 2017 and 2018, two years after the M&A), the M&A data with the M&A announcement date in 2016 are selected, and the specific short-term M&A data table is shown in APPENDIX A.

In the study of M&As, the M&A announcement date is usually defined as 0; the period between t days forward and t days backward is [-t, T], which is the event window. We analyze the impact of M&As on stock prices during this period. The determination of t and T is important. If the event window is too short, it is difficult to fully release the M&As' impact on the stock prices. If the event window is too long, it will incorporate other factors that affect the stock prices, which will result in inaccurate findings. Domestic scholars chose different event windows. For example, Liu Xie (2016) chose event windows (-2, 2), (-5, 5) and (-10, 10) and estimation window (-60, -30); Tian Haifeng (2015) chose event window (-10, 10) and estimation window (-136, -10); Xu Xiaohui (2015) chose window (-1, 1), (-5, 5) and (-10, 10) and estimation window (-130, -11). The event window and the estimation window selected in this paper are [-10, 20] and [-180, -11] respectively.

5.3 Empirical analysis

5.3.1 Model construction. (1) Establishing a expected return model

Expected return refers to the expected return that an enterprise can obtain under normal circumstances without M&A announcement. In this paper, the derived formula of the capital asset pricing model (CAPM) is used to estimate the expected return. The CAPM is as expressed follows:

$$E(R_i) = R_f + \beta(R_m - R_f) \tag{5-7}$$

Where $E(R_i)$ is the individual stock's expected return; β is the systemic risk factor; R_f is the risk-free rate; R_m is the market return.

The above CAPM (5-7) is derived to obtain the market model formula as follows:

$$R_{it} = \alpha + \beta R_{mt} + \varepsilon \tag{5-8}$$

In the above formula, R_{it} is the stock return of Company i on Day t in the estimation period. R_{mt} is the market return on Day t; α、β is the coefficient; ε is the residual. The enterprise's stock return R_{it} is calculated according to the calculation formula of the stock return by using raw data. The calculation formula is as follows:

$$R_{it} = \frac{p_{it} - p_{i(t-1)}}{p_{i(t-1)}} \tag{5-9}$$

In the above formula, p_{it} is the daily closing price of Company i on Day t, and $p_{i(t-1)}$ is the daily closing price of Company i on Day t-1.

The market return is calculated using the SSE Composite Index and the SZSE Composite Index. The basic calculation formula is as follows:

$$R_{mt} = \frac{I_{mt} - I_{m(t-1)}}{I_{m(t-1)}} \tag{5-10}$$

In the above formula, R_{mt} is the market return; I_{mt} is the closing index on Day t; $I_{m(t-1)}$ is the closing index on Day t-1.

(2) Calculating the average abnormal return AAR

The daily abnormal return AR_{it} is obtained by subtracting the calculated expected return from the observed actual daily return:

$$AR_{it} = R_{it} - E(R_{it}) \tag{5-11}$$

The daily average abnormal return AAR_t of all companies involved in M&As in the window period is:

$$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_{it} \tag{5-12}$$

Where n is the number of sample companies.

(3) Calculating the cumulative abnormal return CAR

The cumulative abnormal return CAR_t for each day in the window period is calculated according to the following formula:

$$CAR_{it} = \sum_{i=-10}^{t} AAR_{it} \tag{5-13}$$

(4) Testing whether there is a significant difference between CAR_{it} and 0

Test whether there is a significant difference between CAR_{it} and 0. If $CAR_{it} > 0$, and the test results are significant, it indicates that the short-term performance of the acquirer increases after the M&A. If $CAR_{it} < 0$, and the test results are significant, it indicates that the short-term performance of the acquirer decreases after the M&A. When CAR_{it} is not significantly different from 0, it indicates that the acquirer's short-term performance after the M&A has not changed.

5.3.2 Empirical analysis. To estimate the expected return, we first construct a regression model through the relationship between stock returns and market returns, then estimate the parameters, and finally calculate the expected stock returns. In this study, the regression coefficient risk α and systematic risk β values of -0.0002 and -0.0936 are estimated from the historical stock trading data of 13 enterprises in the estimation window [-180, -11] and the raw data (OLS) of SSE Composite A-share Index and SZSE Composite A-share Index during this period according to Formula (5-8), and the regression equation β_i passes the significance test performed at the level of 1%. Then the expected return regression model for individual stocks is:

$$E(R_i) = -0.0936R_{mt} \tag{5-14}$$

The expected return for each day of each company involved in M&As can be calculated by the market regression model, and finally the average excess return (AAR) and cumulative abnormal return (CAR) for each day in the event window can be calculated according to Formula (5-11), Formula (5-12) and Formula (5-13).

5.4 Analysis of the results of an empirical study on the short-term performance of horizontal M&As on Chinese real estate developers

The AAR and CAR values for each day in the short event window [-10, 20] are calculated using the numerical calculation methods described above. Table 5-1 for the AAR and CAR in the event window shows that the AAR value is negative on most days until 3 days before the M&A announcement date, and it rises to a positive value from Day 3 before the announcement date and shows positive values on most days thereafter. CAR is negative until the day before the M&A announcement date, and has been rising to positive values ever since. It shows that the announcement of the M&As has a positive effect on the stock prices of sample companies.

Table 5-1 AAR and CAR statistics in the event window of M&As

Days	AAR (%)	CAR (%)	Days	AAR (%)	CAR (%)
-10	-0.16	-0.14	6	-0.72	0.26
-9	-0.59	-0.74	7	0.69	0.94
-8	-0.31	-1.05	8	0.45	1.43
-7	-0.16	-1.20	9	-0.52	0.92
-6	0.79	-0.42	10	-0.02	0.89
-5	-0.03	-0.45	11	0.80	1.65
-4	-1.21	-1.65	12	0.35	2.00
-3	0.64	-1.00	13	-0.32	1.67
-2	0.79	0.24	14	0.41	2.09
-1	1.27	1.00	15	-0.43	1.66
1	0.73	1.72	16	-1.14	0.57
2	0.45	2.16	17	0.15	0.69
3	-0.01	2.17	18	0.95	1.65
4	-0.57	1.61	19	0.03	1.67
5	-0.60	0.99	20	-0.03	1.64

This study conducts a statistical analysis based on CAR changes (shown in Figure 5-1 below). It can be seen from the figure that CAR was less than 0 in the 2-10 days prior to the M&A announcement date, and it passed the T-test and was significant at the 1% level. Two days before the M&A announcement date, the CAR was -1.65%, and it rose rapidly to be greater than 0 in the short term due to the impact of M&As. It indicated that the market was aware of the upcoming news to some extent and reacted to it before the announcement of the M&As. CAR peaked at 2.16% on the 2nd day after the announcement of the M&As, which indicated that the market was stimulated by the M&As and had good expectations for the M&As. CAR decreased rapidly from the 3rd day after the announcement date to 0.26% on the 6th day after the announcement date, and showed ups and downs in the later period, but CAR was always greater than 0. This was a normal reflection of the market's return to rationality on the M&As.

It can be seen from the above table that the test value is large, and the overall level of the probability value is maintained at 0, which proves that the sample data is lower than the significance level. It can be seen from this that there is a certain correlation between the original data variables, and the correlation coefficient matrix of the data can be verified by testing. At the same time, it can also be proved that it is suitable for factor analysis, and using the method of factor analysis to analyze the performance of M&As can obtain remarkable results.

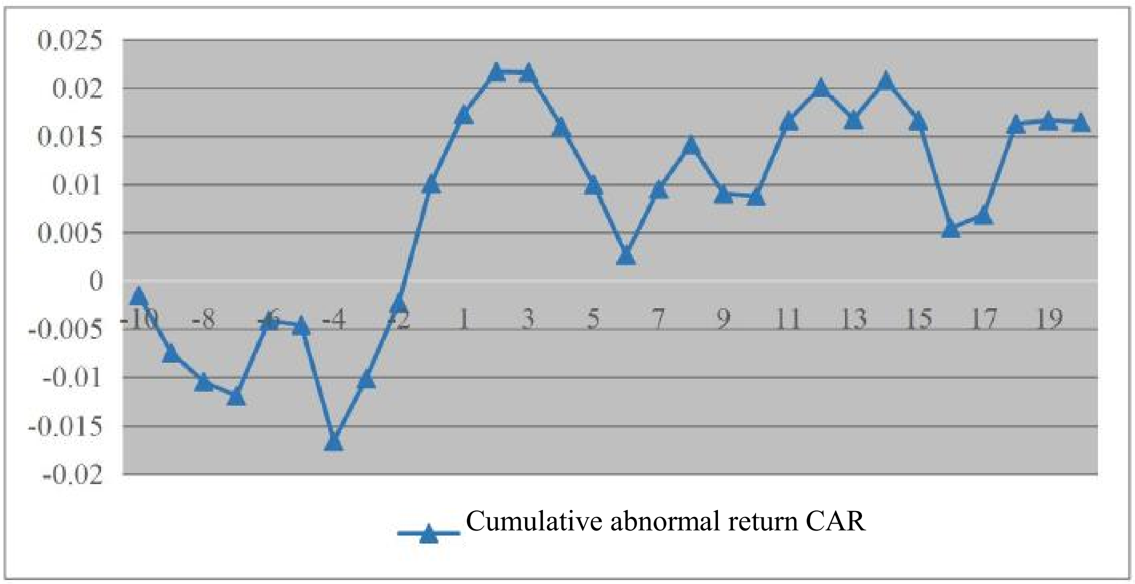


Figure 5-1 Statistical analysis of CAR during the window period of M&As

Table 5-2 CAR-T test for window events

Test value=0						
Sample	T-test	Degrees of freedom	Significance	Mean difference	95% confidence interval for the difference	
					Lower limit	Upper limit
1	1.37	10	0.040	1.328573862	-0.672220519	3.329366021
2	-4.009	10	0.002	-4.997480658	-7.769842409	-2.224839224
3	-5.449	10	0.000	-6.217988523	-8.647888733	-3.76580457
4	1.038	10	0.032	0.538631851	-0.609515169	1.686778871
5	2.142	10	0.049	2.347884261	-0.107164542	4.802933064
6	0.95	10	0.043	0.33990811	-0.594790086	1.274606306
7	0.213	10	0.048	0.204751565	-2.068846861	2.47834999
8	2.738	10	0.018	2.400323042	0.510959143	4.289686941
9	5.742	10	0.000	9.757241367	6.037927195	13.47655554

Table 5-2(continued)

Test value=0						
Sample	T-test	Degrees of freedom	Significance	Mean difference	95% confidence interval for the difference	Sample
					Lower limit	Upper limit
10	-4.08	10	0.002	-5.414272727	-8.342111856	-2.486433598
11	3.196	10	0.009	5.12453323	1.617304004	8.631762456
12	4.785	10	0.001	3.836817707	2.041124204	5.63251121
13	4.125	10	0.002	16.42251	7.492253469	25.35282384

Table 5-3 AAR&CAAR for window events during period of (-2,2;-1,1)

Objects Acquirer	AR-2	AR-1	AR1	AR2	AAR (-2,2)	AAR (-1,1)	CAAR (-2,2)	CAAR (-1,1)
Oceanwide Holdings (000046.SZ)	-0.004	0.0066	0.0077	0.0035	0.0035	0.0036	0.0138	0.0143
① *ShibeiHi-Tech (600604.SH)*	0.1001	0.0072	0.029	0.0081	0.0361	0.0091	0.1444	0.0362
② *HuaYuan Property (600743.SH)*	0.0004	0.0072	0.0001	0.0001	0.002	0.0018	0.0078	0.0073
③ *HuaYuan Property (600743.SH)*	-0.0165	0.0093	-0.0136	-0.0136	-0.0086	-0.0011	-0.0344	-0.0043
④*PearlRiver Enterprises (600684.SH)*	-0.0058	0.0031	-0.0088	-0.0141	-0.0064	-0.0014	-0.0256	-0.0057
Jinke Property (000656.SZ)	0.0162	0.0265	0.0013	-0.0008	0.0108	0.007	0.0432	0.0278

Table 5-3(continued)

Objects Acquirer	AR-2	AR-1	AR1	AR2	AAR (-2,2)	AAR (-1,1)	CAAR (-2,2)	CAAR (-1,1)
⑤*Seazen Holdings (601155.SH)*	0.0125	0.0553	-0.0152	0.0276	0.0201	0.01	0.0802	0.0401
⑥*Chixia Development (600533.SH)*	0.0098	0.006	0.0054	0.0039	0.0063	0.0029	0.0251	0.0114
⑦*Languang Development (600466.SH)*	0.0053	0.0053	-0.0004	-0.0013	0.0022	0.0012	0.0089	0.0049
Tahoe Group (000732.SZ)	-0.0329	-0.0329	0.0012	0.0039	-0.0152	-0.0079	-0.0607	-0.0317
Yango Group (000671.SZ)	-0.003	0.0144	-0.011	0.0106	0.0028	0.0009	0.011	0.0034
CCCG Real Estate (000736.SZ)	0.1002	0.0997	0.0471	-0.0885	0.0396	0.0367	0.1585	0.1468
⑧*ChinaFortune (600340.SH)*	0.063	-0.0375	0.0078	-0.0115	0.0055	-0.0074	0.0218	-0.0297
⑨*Hongsheng Technology (600817.SH)*	0.0429	-0.0074	0.0501	0.0506	0.0341	0.0107	0.1362	0.0427
⑩*Guangzhou Yuetai (600393.SH)*	0.036	-0.0375	0.0078	-0.1115	-0.0263	-0.0074	-0.1052	-0.0297
CHINA GE INVESTMENT (000537.SZ)	0.0429	-0.0074	0.0501	0.0506	0.0341	0.0107	0.1362	0.0427
Nanshan Holding (002314.SZ)	-0.0375	0.036	-0.0125	0.0078	-0.0016	0.0059	-0.0062	0.0235
KinghandlInvestment (000615.SZ)	0.0429	-0.0074	0.0506	0.0501	0.0341	0.0108	0.1362	0.0432
Binjiang Group (002244.SZ)	0.0078	-0.0115	-0.0375	0.036	-0.0013	-0.0123	-0.0052	-0.049
⑪*Huafa Industrial (600325.SH)*	0.0501	-0.0074	0.0429	0.0506	0.0341	0.0089	0.1362	0.0355
AVIC Sunda (000043.SZ)	0.116	0.0089	-0.0055	0.0048	0.0311	0.0009	0.1242	0.0034

Table 5-3(continued)

Objects Acquirer	AR-2	AR-1	AR1	AR2	AAR (-2,2)	AAR (-1,1)	CAAR (-2,2)	CAAR (-1,1)
⑫*Xinhu Zhongbao (600208.SH)*	0.0495	0.05	0.0505	0.0481	0.0495	0.0251	0.1981	0.1005
⑬*ZhangjiangHi-tech(600895.SH)*	0	-0.0001	-0.0013	-0.0001	-0.0004	-0.0004	-0.0015	-0.0014
Centralcon Investment (000042.SZ)	0.0424	-0.0077	0.0501	0.0502	0.0338	0.0106	0.135	0.0424

The CAR was less than 0 before the M&A announcement date, but it rose rapidly from 1 day before the M&A announcement date, and in 20 days after the end of the event window, it was greater than 0, passed the T-test and was significant at the 1% level. In the short-term event window, the acquirer in horizontal M&As achieved positive performance after the M&A announcement date, and the market had positive expectations for M&As, but the CAR obtained peaked at only 2.16% on the day after the announcement date. Although the acquirer in horizontal M&As obtained positive performance after the M&A announcement date, but the M&A performance obtained was relatively limited and did not show significant synergies, so M&A performance was not very ideal in the short term.

CHAPTER 6

AN EMPIRICAL STUDY ON THE LONG-TERM PERFORMANCE OF HORIZONTAL M&AS ON CHINESE LISTED REAL ESTATE DEVELOPERS

6.1 Selection of research methods

In this paper, the case study method, the questionnaire method, the balanced scoring method, the event study method and the financial indicators method are studied based on analysis of the literature. Among others, the financial indicators method is a common method used to study long-term performance. The financial indicators method is a quantitative analysis method that compares the changes in the financial indicators of the enterprises involved in M&As after the M&As to see whether the performance of the enterprises involved in the M&As has improved. In general, the M&A performance of the enterprises involved in M&As is evaluated comprehensively by selecting a series of indicators that can reflect the financial ability of such companies in all respects to constitute a financial evaluation system. The advantages of the financial indicators method are as follows: (1) financial indicators are conducive to comparative analysis as they are sustainable and can reflect the financial performance of the companies over the years; (2) financial indicators are available as the annual reports of listed companies are disclosed in a regular, timely and easily accessible manner; (3) financial indicators are comprehensive, and can reflect the M&A performance of the enterprises involved in M&As from different angles by building a financial evaluation system through various financial indicators. Of course, financial indicators also have limitations: (1) listed companies have the possibility of manipulating financial statements, resulting in distortion of financial indicators; (2) the evaluation of M&A performance using the financial indicators method is not comprehensive enough as the method does not consider the impact of non-financial factors.

This paper adopts a combination of the financial indicators method and the factor analysis method to establish a set of financial indicator evaluation system by selecting the indicators reflecting the financial capability of the enterprises involved in M&As in various aspects, and then establishes a comprehensive score model in combination with the factor analysis method to evaluate the impact of horizontal M&As on the long-term performance of the enterprises involved in M&As through the changes in the comprehensive performance scores of the samples in the year before, the year of and two years after the M&As. In addition, this paper analyzes the impact of M&As on the financial performance of the enterprises involved in M&As from five aspects of financial capability.

6.2 Building a financial indicator evaluation system for M&A performance

6.2.1 Building a financial indicator evaluation system for M&A performance. The M&A performance involves multiple aspects of the enterprises involved in M&As, not the single post-M&A profit performance, nor the single post-M&A increase in market share, but a combination of post-M&A profitability, solvency, development capacity, cash capacity and operating capacity of the enterprises involved in M&As. This requires the construction of an evaluation system with multiple financial indicators. The financial indicators selected for the evaluation system must meet the following three conditions: (1) the selected indicators shall be scientific and related to the enterprise performance, and can reflect the enterprise performance; (2) the indicators are available, and the selected indicators shall have standard access channels, and the enterprises must disclose these indicators in a standardized manner, or the indicators obtained indirectly can be calculated from the data disclosed by the enterprises in a standardized manner; (3) the indicators shall be comprehensive, and the selected indicators shall be able to reflect all aspects of the enterprises' ability and evaluate the enterprises' comprehensive performance; (4) the indicators shall be comparable, and the selected indicators shall be widely applicable in the peer evaluation, with comparability and applicability.

Finally, subject to the satisfaction of the conditions for the selection of indicators for the financial evaluation system, and in combination with the analysis of the characteristics of the real estate industry in Chapter 3 and Chapter 4 above, 11 financial indicators in five categories, including 3 solvency indicators, 3 profitability indicators, 2 operating capacity indicators, 2 development capacity indicators and 1 cash capacity indicator, are selected to build an evaluation system as shown in the following Table 6-1 Financial indicator system table.

Table 6-1 Financial indicator system constructed in this study

Primary indicator	Secondary indicator	Symbol	Calculation formula
Solvency	Current ratio	X1	Current assets / current liabilities
	Asset-liability ratio	X2	Total Liabilities/Total Assets
	Interest coverage ratio	X3	EBIT / interest expense
Profitability	Net operating margin	X4	Net profit / revenue
	Return on equity	X5	Net profit / shareholders' equity
	Profit to cost ratio	X6	Total profit / (operating cost + general and administrative expenses + selling and distribution expenses + financial expenses)
Operating capacity	Receivable turnover	X7	Revenue from primary business / average balance of accounts receivable
	Inventory turnover	X8	Cost of primary business / average balance of inventories
Development capacity	Total capital growth rate	X9	Increase in total assets in the current period / total assets at the beginning of the period
	Growth rate of revenue	X10	Increase in revenue in the current period / net profit at the beginning of the period
Cash capacity	Revenue to cash ratio	X11	Net cash flows from operating activities / revenue

6.2.2 Analysis of financial evaluation indicators of M&A performance. (1) Solvency indicators

Solvency indicators are indicators to measure an enterprise's ability to repay debts. They include long-term solvency indicators and short-term solvency indicators. Enterprises need borrowings in the course of operation. Different long-term and short-term debt structures require different interest payments, which have a significant impact on the operating cash flow of enterprises and affect the long-term sustainable operation of enterprises. Current ratio is an indicator that reflects the use of current assets to protect short-term debt, and debt-asset ratio is an indicator that reflects the use of total assets to protect total liabilities. Real estate developers generally borrow heavily for development and need to pay a large scale of debt interest, which has a significant impact on the cash flows of the developers, and the interest coverage ratio is used to measure the ability of the developers to pay interest. Therefore, this paper selects X1, X2 and X3 to reflect the solvency.

(2) Profitability indicators

Profitability indicators reflect an enterprise's ability to use existing resources to make profit. It is the most important financial indicator of an enterprise whose ultimate purpose of operation is to make profit. Return on equity can be broken down into net profit margin on sales, asset turnover and equity multiplier, which comprehensively reflect earnings, operations and solvency. Operating margin reflects the profit per unit of revenue can bring, and it is a commonly used profitability indicator. As a result of the significant state regulation of "land" and "banking" in the real estate industry, the profits of real estate developers have dropped significantly. The real estate developers begin to pay attention to the control of costs and expenses, and the use of the profit to cost ratio index in this paper is also in line with the current real estate developers' strict control of costs and expenses. Therefore, this paper uses X4, X5 and X6 financial indicators to reflect profitability.

(3) Operating capacity indicators

The operating capacity indicators reflect the asset turnover of an enterprise. The faster the turnover, the more profits will be earned. Generally, they include total asset turnover, inventory turnover and receivable turnover. The real estate developers' stock commercial housing is presented in the inventory account, and the inventory turnover is a good indication of a real estate developer's ability to collect money. The total asset turnover reflects the turnover rate of an enterprise's total assets. Therefore, X7 and X8 indicators are used in this paper to reflect the operating capacity of enterprises.

(4) Development capacity indicators

Development capacity indicator is to measure an enterprise's future growth, mainly in terms of asset expansion and revenue growth. M&As value the enterprises' post-M&A ability to sustain, and the development capacity indicator can properly indicate such growth. Therefore, this paper selects the total capital growth rates X9 and the growth rate of revenue X10 as two indicators to measure the development capacity.

(5) Cash capacity indicators

The cash capacity indicator reflects the ability of an enterprise to manage its cash flows. Cash flows are required for the normal operating activities and investing activities of an enterprise. It can be seen that cash flows are crucial to an enterprise’s survival. The revenue generated by a business must be converted into cash flows. Excessive accounts receivable can lead to an increase in false profits, a situation where there is money on the accounts but there is no actual cash. The ability to control cash is very critical to real estate developers as they need a lot of money to pay for land and construction upfront in order to sustain their business. Considering the importance of cash capacity in real estate developers' operation and management, this paper chooses X11, which is a typical indicator, to reflect the cash capacity.

6.3 Sources and processing of research data

6.3.1 Selection of study samples and panel data sources. The real estate developer samples and related financial indicator data in M&As are collected and sorted through the Guotaian CSMAR database. Finally, to maintain the consistency between the samples of real estate developers involved in M&As in this chapter and those samples studied in the previous chapter, this paper selects 24 Chinese A-share listed real estate developers with horizontal M&As in 2016, including 11 listed on the Shenzhen Stock Exchange and 13 listed on the Shanghai Stock Exchange. This paper collects and sorts out the financial indicators of the 24 A-share listed real estate companies with horizontal M&As in 2016 in the year before, the year of and two years after the M&As.

6.3.2 Study sample data treatment - the factor analysis method. This paper uses a combination of the financial indicators method and the factor analysis method to investigate the long-term performance of M&As. In this paper, there are 11 indicators in 5 aspects, and some of them have high correlation due to the large number of indicators selected. If we only study them to reflect the M&A performance before and after the M&As, the study effect will be greatly reduced.

Therefore, this paper uses the factor analysis method to divide these financial indicators with complex relationships into several groups represented by common factors, clarify the relationships among indicators, reduce the correlation of variables between groups, and comprehensively study the long-term M&A performance.

The data used in the factor analysis method in this study are processed as follows:

(1) Testing the relevance of original variables

The condition for doing a study using the factor analysis is that there should be strong correlation between the variables. The KMO test and Bartlett's Test of Sphericity are commonly used.

(2) Extracting common factors

If the original variables meet the above test requirements, they can undergo factor analysis to extract a common factor. The conditions for becoming a common factor: the cumulative variance contribution of an extracted factor is generally required to exceed 70% and the eigenvalue of a common factor should be greater than 1. See the table below for the variance interpretation of basic data on which this study is based.

Table 6-2 Total data variance interpretation table

Element	Initial eigenvalue			Extract sum of squared loadings		
	Total	Variance percentage	Accumulative %	Total	Variance percentage	Accumulative %
1	3.23	29.37	29.26	3.23	29.37	29.26
2	2.01	18.21	47.46	2.01	18.21	47.46
3	1.74	14.76	62.31	1.74	14.76	62.31
4	1.39	11.78	73.85	1.39	11.78	73.85
5	1.12	9.29	83.25	1.12	9.29	83.25
6	0.85	6.87	89.86			
7	0.59	4.43	94.35			
8	0.41	2.71	96.89			
9	0.19	1.66	98.52			

Table 6-2 (continued)

Element	Initial eigenvalue			Extract sum of squared loadings		
	Total	Variance percentage	Accumulative %	Total	Variance percentage	Accumulative %
10	0.21	1.22	99.59			
11	0.07	0.45	100.00			

(3) Explaining the nomenclature of common factors

After classifying the original variables to obtain the common factor, we analyze the common factor through the rotated composition matrix table and interpret the common factor's reflection of the overall situation.

(4) Constructing a factor score model

In the factor component coefficient matrix obtained according to the specific operation of the factor analysis method, each value corresponds to a financial indicator in the financial indicator evaluation system, and the combination of these values and financial indicators constitutes the factor score model's calculation formula as follows:

$$F_i = v_{i1}X_1 + v_{i2}X_2 + \cdots + v_{im}X_m (i = 1,2, \dots\dots, m) \quad (6\text{-}1)$$

F_i is the score of each factor; v_{im} is the factor score coefficient; X_m is the original financial indicator variable.

(5) Constructing a comprehensive performance score model

The comprehensive performance score is affected by factor scores and variance contributions. It is calculated by multiplying the score of each factor by the proportion of the factor's contribution to the cumulative explained variance.

$$Z_t = e_1F_1 + e_2F_2 + \cdots + e_pF_p(t = -1,0,1,2) \tag{6-2}$$

Z_t is the comprehensive performance score in each year before and after the M&As; F_p is the score of each factor; e_p is the proportion of the factor's contribution to the cumulative explained variance after rotation.

6.4 Empirical study

6.4.1 Extracting common factors. The extracted common factor must satisfy two conditions: first, there is a requirement for the explanatory rate of the variance of the original variables, and generally the extracted common factor is required to explain more than 70% of the original variables; secondly, the eigenvalue size of the factor. The eigenvalue is the contribution of each factor to the variance of all variables and is numerically equal to the sum of the squares of the factor loads in the column. The eigenvalue of the common factor is usually selected to be greater than 1.

Based on the total variance explained for each year before and after the M&A in this study (shown in Tables 6-3, 6-4, 6-5, and 6-6 below), the research data show that number of extracted common factors with eigenvalues greater than 1 is as follows: four in 2015, the year before the M&As; five in 2016, the year of the M&As; four in 2017, one year after the M&As; and five in 2018, two years after the M&As. The extracted common factors are denoted by F1, F2, F3, F4, and F5, respectively. The cumulative explained variance ratio of the common factor to original variables in each year before and after the M&As was 80.535, 83.666, 75.249 and 83.143, respectively. It indicates the high explanatory power of the common factors extracted in each year for the original 11 variables, and it is feasible to use the factor analysis method to evaluate the comprehensive performance.

Table 6-3 Total variance explained of M&A data for this study in 2015

Component	Initial eigenvalue			sum of squares of extracted load			Sum of squares of rotational load		
	Total	Percentage of variance	Cumulative (%)	Total	Percentage of variance	Cumulative (%)	Total	Percentage of variance	Cumulative (%)
1	4.45	40.56	40.56	4.45	40.56	40.56	4.36	39.71	39.71
2	1.93	17.44	58.00	1.93	17.44	58.00	1.92	17.40	57.10
3	1.46	13.19	71.18	1.46	13.19	71.18	1.46	13.19	70.27
4	1.04	9.37	80.55	1.04	9.37	80.55	1.14	10.29	80.55
5	0.90	8.10	88.63						
6	0.63	5.61	94.23						
7	0.26	2.27	96.49						
8	0.20	1.75	98.23						
9	0.18	1.58	99.80						
10	0.03	0.19	99.98						
11	0.00	0.02	100.00						

Table 6-4 Total variance explained of M&A data for this study in 2016

Comp onent	Initial eigenvalue			sum of squares of extracted load			Sum of squares of rotational load		
	Total	Percenta ge of variance	Cumula tive (%)	Total	Percenta ge of variance	Cumulat ive (%)	Total	Percenta ge of variance	Cumulati ve (%)
1	3.33	30.15	30.15	3.33	30.15	30.15	2.77	25.14	24.14
2	1.94	17.56	47.70	1.94	17.56	47.70	1.85	16.72	41.85
3	1.48	13.32	61.01	1.48	13.32	61.01	1.69	15.32	57.16
4	1.33	11.98	72.98	1.33	11.98	72.98	1.61	14.53	71.67
5	1.19	10.71	83.68	1.19	10.71	83.68	1.33	12.01	83.68
6	0.64	5.69	89.36						
7	0.46	4.13	93.48						
8	0.33	2.89	96.36						
9	0.25	2.19	98.54						
10	0.14	1.20	99.73						
11	0.04	0.30	100.00						

Table 6-5 Total variance explained of M&A data for this study in 2017

Compon ent	Initial eigenvalue			sum of squares of extracted load			Sum of squares of rotational load		
	Tot al	Percenta ge of variance	Cumulati ve (%)	Tot al	Percenta ge of variance	Cumulati ve (%)	Tot al	Percenta ge of variance	Cumulati ve (%)
1	3.03	27.47	27.47	3.03	27.47	27.47	2.90	26.31	26.31
2	2.41	21.83	49.29	2.41	21.83	49.30	2.41	21.85	48.15
3	1.84	16.66	65.93	1.84	16.66	65.93	1.72	15.56	63.70
4	1.04	9.34	75.26	1.04	9.34	75.26	1.28	11.57	75.26
5	0.77	6.93	82.18						
6	0.76	6.93	82.18						
7	0.63	5.62	94.58						
8	0.25	2.18	96.75						
9	0.17	1.50	98.24						
10	0.14	1.23	99.46						
11	0.07	0.54	100.00						

Table 6-6 Total variance explained of M&A data for this study in 2018

Component	Initial eigenvalue			sum of squares of extracted load			Sum of squares of rotational load		
	Total	Percentage of variance	Cumulative (%)	Total	Percentage of variance	Cumulative (%)	Total	Percentage of variance	Cumulative (%)
1	3.23	29.27	29.27	3.23	29.27	29.27	2.86	25.94	25.94
2	2.01	18.20	47.47	2.01	18.20	47.17	1.87	16.95	42.88
3	1.64	14.85	62.30	1.64	14.85	62.30	1.63	14.72	57.60
4	1.29	11.68	73.97	1.29	11.67	73.97	1.58	14.31	71.90
5	1.02	9.19	83.15	1.02	9.19	83.15	1.25	11.26	83.15
6	0.76	6.79	89.93						
7	0.49	4.33	94.25						
8	0.31	2.71	96.95						
9	0.18	1.56	98.50						
10	0.13	1.12	99.61						
11	0.05	0.41	100.00						

6.4.2 Nomenclature and interpretation of common factors. Naming and explaining the common factor requires naming and explaining the ability of the extracted common factor to reflect some aspect of the overall situation. The factor loading coefficient in the rotated component matrix reflects the degree of correlation between that common factor and the variables. The closer the absolute value of the coefficient to 1, the higher the correlation is. The rotated component matrix in 2015, the year before the M&As, is used as an example to explain the naming of the four common factors extracted.

Table 6-7 Rotated components matrix of study data in 2015

	Principal component			
	1	2	3	4
Net operating margin	0.981			
Profit to cost ratio	0.975			
Current ratio	-0.959			
Inventory turnover	-0.807			
Return on equity	0.768			
Receivable turnover		0.937		
Asset-liability ratio		0.931		
Revenue to cash ratio			0.839	
Interest coverage ratio			0.659	
Growth rate of revenue				-0.775
Total capital growth rate	0.479			0.571

According to Table 6-7 above, the absolute value of the coefficient of Common Factor F1 on net operating margin X4, cost and expense rate X6, current ratio X1 and return on equity X5 is close to 1, and is 0.981, 0.975, -0.959 and 0.768 respectively, indicating that F1 mainly depends on these four indicators, and F1 is the indicator of profitability and solvency. Common Factor F2 has larger coefficients close to 1 on receivable turnover X7 and debt-asset ratio X2, which are 0.937 and 0.931, respectively, indicating that F2 is a factor reflecting operating capacity and solvency. Common Factor F3 has larger coefficients on two variances, namely revenue to cash ratio X11 and interest coverage ratio X3, which are 0.839 and 0.659 respectively, indicating that F3 is a common factor reflecting cash capacity and solvency. Common Factor F4 has coefficients with large absolute values of -0.775 and 0.571 on two variables, namely revenue growth rate X10 and total asset growth rate X9, respectively, indicating that F4 is a common factor reflecting cash capacity.

6.4.3 Building a factor score model. After the extraction of the common factor and interpretation of the common factor nomenclature, the score for each common factor can be calculated by the factor score model in Formulas (6-1) and (6-2) above

Table 6-8 Model component score coefficient matrix built in 2015

	Principal component			
	1	2	3	4
Net operating margin	0.232	-0.017	-0.008	-0.082
Profit to cost ratio	0.231	-0.005	0.002	-0.085
Current ratio	-0.235	0.031	-0.051	0.145
Inventory turnover	-0.171	-0.036	0.141	-0.153
Return on equity	0.187	-0.055	0.210	-0.024
Receivable turnover	-0.029	0.515	0.068	-0.090
Asset-liability ratio	-0.028	0.501	0.024	-0.041
Revenue to cash ratio	-0.004	0.118	0.594	-0.121
Interest coverage ratio	0.027	-0.095	0.443	0.319
Growth rate of revenue	0.072	0.061	-0.082	-0.715
Total capital growth rate	0.0069	0.052	-0.265	0.486

From the data in Table 6-8 above, the factor score coefficient matrix in the component score coefficient matrix in 2015 builds the factor score model in 2015, the year before the M&As:

$$F_1 = -0.235X_1 - 0.028X_2 + 0.027X_3 + 0.232X_4 + 0.187X_5 + 0.231X_6 - 0.029X_7 - 0.171X_8 + 0.069X_9 + 0.072X_{10} - 0.004X_{11}$$

$$F_2 = 0.031X_1 + 0.51X_2 - 0.095X_3 - 0.017X_4 - 0.0557X_5 - 0.005X_6 + 0.515X_7 - 0.036X_8 + 0.052X_9 + 0.061X_{10} + 0.118X_{11}$$

$$F_3 = -0.051X_1 - 0.024X_2 + 0.443X_3 - 0.008X_4 + 0.210X_5 + 0.002X_6 + 0.068X_7 + 0.141X_8 - 0.265X_9 - 0.082X_{10} + 0.594X_{11}$$

$$F_4 = 0.145X_1 - 0.041X_2 + 0.319X_3 - 0.082X_4 - 0.024X_5 - 0.085X_6 - 0.09X_7 - 0.153X_8 + 0.486X_9 - 0.715X_{10} - 0.121X_{11}$$

Bringing the average values of the original 11 variables from X1-X11 into the above function yields the score of each common factor in 2015, the year before the M&As.

$F_1 = -27.6941$, $F_2 = 592.0513$, $F_3 = 183.4010$, $F_4 = -33.4012$

Table 6-9 Model component score coefficient matrix built in 2016

	Principal component				
	1	2	3	4	5
Net operating margin	0.278	-0.026	0.215	-0.116	-0.045
Profit to cost ratio	0.308	-0.041	0.157	-0.139	-0.047
Current ratio	-0.327	0.119	0.393	-0.174	-0.032
Inventory turnover	0.055	0.037	-0.576	-0.004	-0.056
Return on equity	0.336	0.140	-0.167	-0.017	0.050
Receivable turnover	-0.017	0.478	0.016	-0.125	0.021
Asset-liability ratio	0.028	0.465	-0.082	0.089	-0.060
Revenue to cash ratio	0.016	0.209	-0.078	-0.049	0.570
Interest coverage ratio	-0.026	-0.197	0.155	0.024	0.651
Growth rate of revenue	-0.034	-0.070	-0.147	0.0621	-0.042
Total capital growth rate	-0.106	0.019	0. 207	0.468	0.057

From the data in Table 6-9 above, the factor score coefficient matrix in the component score coefficient matrix in 2016 builds the factor score model in 2016, the year before the M&As:

$$F_1 = -0.327X_1 + 0.028X_2 - 0.026X_3 + 0.278X_4 + 0.336X_5 + 0.308X_6 - 0.017X_7 - 0.055X_8 - 0.106X_9 - 0.034X_{10} + 0.016X_{11}$$

$$F_2 = 0.119X_1 + 0.465X_2 - 0.197X_3 - 0.026X_4 + 0.140X_5 - 0.05X_6 + 0.478X_7 + 0.037X_8 + 0.019X_9 - 0.070X_{10} + 0.209X_{11}$$

$$F_3 = 0.393X_1 - 0.082X_2 + 0.155X_3 + 0.215X_4 - 0.167X_5 + 0.157X_6 + 0.016X_7 - 0.576X_8 + 0.207X_9 - 0.147X_{10} - 0.078X_{11}$$

$$F_4 = -0.174X_1 + 0.089X_2 + 0.024X_3 - 0.116X_4 - 0.017X_5 - 0.139X_6 - 0.125X_7 - 0.004X_8 + 0.468X_9 + 0.621X_{10} - 0.049X_{11}$$

$$F_5 = -0.032X_1 - 0.060X_2 + 0.651X_3 - 0.045X_4 + 0.050X_5 - 0.047X_6 + 0.021X_7 - 0.006X_8 + 0.056X_9 - 0.042X_{10} + 0.570X_{11}$$

Bringing the average values of the original 11 variables from X1-X11 into the above function yields the score of each common factor in 2015, the year before the M&As.

$F_1 = -9.9362$, $F_2 = 269.4011$, $F_3 = 10.8375$, $F_4 = -69.9451$, $F_5 = 20.3071$

Table 6-10 Model component score coefficient matrix built in 2017

	Principal component			
	1	2	3	4
Net operating margin	0.326	-0.045	-0.067	0.042
Profit to cost ratio	0.309	-0.056	-0.073	-0.018
Current ratio	-0.231	0.012	0.141	0.565
Inventory turnover	-0.211	-0.010	-0.202	0.026
Return on equity	0.171	0.215	0.189	0.003
Receivable turnover	-0.059	0.350	0.000	-0.0126
Asset-liability ratio	-0.061	0.399	-0.212	-0.086
Revenue to cash ratio	-0.131	0.031	0.024	-0.532
Interest coverage ratio	-0.047	-0.051	0.547	0.262
Growth rate of revenue	0.009	0.299	0.092	0.380
Total capital growth rate	0.032	-0.023	0.423	-0.143

From the data in Table 6-10 above, the factor score coefficient matrix in the component score coefficient matrix in 2017 builds the factor score model in 2017, the year before the M&As:

$$F_1 = -0.231X_1 - 0.061X_2 - 0.047X_3 + 0.326X_4 + 0.171X_5 + 0.309X_6 - 0.059X_7 - 0.22X_8 + 0.032X_9 + 0.009X_{10} - 0.131X_{11}$$

$$F_2 = 0.012X_1 + 0.399X_2 - 0.051X_3 - 0.045X_4 + 0.215X_5 - 0.056X_6 + 0.340X_7 + 0.010X_8 - 0.023X_9 + 0.2990X_{10} + 0.031X_{11}$$

$$F_3 = 0.15X_1 - 0.212X_2 + 0.547X_3 + 0.067X_4 + 0.189X_5 - 0.073X_6 + 0X_7 - 0.2026X_8 + 0.423X_9 + 0.092X_{10} + 0.024X_{11}$$

$$F_4 = 0.565X_1 - 0.086X_2 + 0.262X_3 + 0.042X_4 + 0.003X_5 - 0.018X_6 - 0.126X_7 + 0.026X_8 - 0.143X_9 + 0.380X_{10} - 0.532X_{11}$$

Bringing the average values of the original 11 variables from X1-X11 into the above function yields the score of each common factor in 2015, the year before the M&As.

$F_1 = --23.9658$，$F_2 = 139.0147$，$F_3 = 5.1469$，$F_4 = -46.2137$

Table 6-11 Model component score coefficient matrix built in 2018

	Principal component				
	1	2	3	4	5
Net operating margin	0.347	-0.059	-0.013	0.176	-0.058
Profit to cost ratio	0.340	-0.083	-0.069	0.260	-0.121
Current ratio	0.212	0.144	0.113	-0.375	0.246
Inventory turnover	0.066	-0.089	-0.329	0.168	0.467
Return on equity	0.150	0.091	0.070	0.586	0.085
Receivable turnover	0.008	0.510	0.058	-0.049	0.015
Asset-liability ratio	0.034	0.503	-0.015	-0.002	0.026
Revenue to cash ratio	-0.292	-.131	-0.070	0.203	-0.164
Interest coverage ratio	0.086	0.010	0.459	0.205	0.310
Growth rate of revenue	0.025	0.051	0.120	-0.076	0.668
Total capital growth rate	-0.006	-0.005	0.534	-0.053	-0.035

From the data in Table 6-11 above, the factor score coefficient matrix in the component score coefficient matrix in 2018 builds the factor score model in 2018, the year before the M&As:

$$F_1 = 0.212X_1 + 0.034X_2 + 0.086X_3 + 00.347X_4 + 0.150X_5 + 0.340X_6 + 0.008X_7 + 0.066X_8 - 0.006X_9 + 0.025X_{10} - 0.292X_{11}$$

$$F_2 = 0.144X_1 + 0.503X_2 + 0.010X_3 - 0.059X_4 + 0.10X_5 - 0.083X_6 + 0.510X_7 - 0.089X_8 - 0.005X_9 + 0.051X_{10} - 0.131X_{11}$$

$$F_3 = 0.113X_1 - 0.015X_2 + 0.459X_3 - 0.013X_4 + 0.070X_5 - 0.069X_6 + 0.058X_7 - 0.329X_8 + 0.534X_9 + 0.120X_{10} - 0.070X_{11}$$

$$F_4 = -0.375X_1 - 0.002X_2 + 0.241X_3 + 0.176X_4 + 0.586X_5 + 0.260X_6 - 0.049X_7 + 0.168X_8 - 0.053X_9 - 0.076X_{10} + 0.203X_{11}$$

$$F_5 = 0.246X_1 + 0.026X_2 + 0.310X_3 - 0.58X_4 + 0.085X_5 - 0.13X_6 + 0.015X_7 + 0.467X_8 - 0.035X_9 + 0.668X_{10} - 0.164X_{11}$$

Bringing the average values of the original 11 variables from X1-X11 into the above function yields the score of each common factor in 2015, the year before the M&As.

$$F_1 = 2.9398，F_2 = 111.9482，F_3 = 18.0657，F_4 = -7.8647，F_5 = 7.4869$$

6.4.4 Building a comprehensive score model for M&A performance. From the analysis of the comprehensive score model for M&A Performance above, the comprehensive performance score function in each year before and after the M&As can be obtained as follows:

the year before the M&A, i.e. 2015:

$$Z_{t-1} = 0.39712F_1 + 0.17401F_2 + 0.13172F_3 + 0.10284F_4$$

the year of the M&As, i.e. 2016:

$$Z_{t0} = 0.25131F_1 + 0.16702F_2 + 0.153173F_3 + 0.14523F_4 + 0.12000F_5$$

the first year after the M&As, i.e. 2017:

$$Z_{t+1} = 0.26311F_1 + 0.21856F_2 + 0.15562F_3 + 0.11553F_4$$

the second year after the M&As, i.e., 2018:

$$Z_{t+2} = 0.25931F_1 + 0.16951F_2 + 0.14726F_3 + 0.14297F_4 + 0.11266F_5$$

By substituting the common factor score in each year into the above model, the M&A performance score in each year can be obtained:

the year before the M&A, i.e. 2015 $Z_{t-1} = 112.7286$; the year of the M&As, i.e. 2016 $Z_{t0} = 36.5036$; the year after the M&As, i.e. 2017 $Z_{t+1} = 19.4321$; the second year after the M&As $Z_{t+2} = 22.1074$. Among them, see the table below for the performance score model coefficient matrix.

Table 6-12 Table of coefficient matrix of performance score model

	Element			
	1	2	3	4
Current ratio	-0.226	0.031	-0.049	0.139
Asset-liability ratio	-0.035	0.498	0.034	-0.039
Interest coverage ratio	0.027	-0.089	0.439	0.332
Net operating profit rate	0.242	-0.015	-0.006	-0.078
Net interest rate	0.195	-0.049	0.189	-0.017
Cost profit margin	0.241	-0.003	0.001	-0.082
Turnover ratio of accounts receivable	-0.039	0.525	0.058	-0.091
Inventory turnover	-0.182	-0.029	0.137	-0.149
Growth rate of total assets	0.071	0.049	-0.257	-0.475
Growth rate of operating income	0.069	0.063	-0.075	-0.697
Cash ratio of operating income	-0.004	0.128	0.578	-0.096

6.5 Analysis of the results of an empirical study on the long-term performance of horizontal M&As on Chinese real estate developers

6.5.1 Overall evaluation of the long-term performance. According to the tables of the comprehensive performance scores of the companies involved in the M&As in this study (shown in Tables 6-12 and 6-13 below), it can be seen that the comprehensive performance scores in each year before and after the M&As show a trend of decline followed by an increase, with the performance scores in the year of the M&As declining the most compared to the performance scores in the year before the M&As, then declining slowly, and starting to increase in the second year after the M&As.

Table 6-13 Summary of the comprehensive performance scores of the samples

	-1	Z_{t0}	Z_{t+1}	Z_{t+2}
Comprehensive performance score	112.81	36.48	19.57	22.03

Table 6-14 Calculation of comprehensive performance difference of the samples

	$Z_{t0} - Z_{t-1}$	$Z_{t+1} - Z_{t0}$	$Z_{t+2} - Z_{t+1}$	$Z_{t0} - Z_{t-1}$	$Z_{t+1} - Z_{t-1}$	$Z_{t+2} - Z_{t-1}$
Difference	-76.33	-16.91	2.46	-76.33	-93.24	-90.78

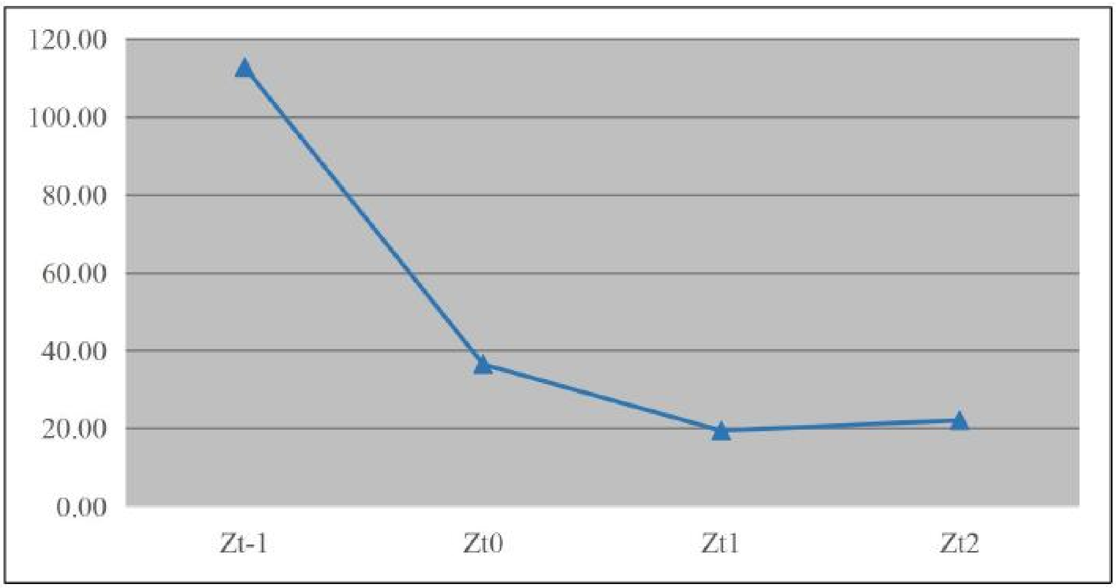


Figure 6-1 Comprehensive performance score of the samples before and after the M&As

As can be seen from the comprehensive performance scores in each year before and after the M&As in Figure 6-1 above, the M&A performance in Z_{t0}, the year of the M&As, decreased sharply by 209.24% compared to Zt1. The M&A performance in Z_{t+1}, the first year after the M&As, continued to decline compared to Zt0, but the decline slowly reached 86.41%. The M&A performance rose slowly in Z_{t+2}, the second year after the M&As, by 12.57% compared to Z_{t+1}. It shows that the long-term performance descended first and then rose slowly after the M&As.

As can be seen from the comprehensive performance difference between the each year after the M&As and the year before the M&As in Figure 5.2, the M&A performance difference between at $Z_{t0} - Z_{t-1}$, $Z_{t+1} - Z_{t0}$ and $Z_{t+2} - Z_{t+1}$ was -76.33, -16.91 and 2.46 respectively, showing an overall trend of decreasing and then increasing and becoming positive at $Z_{t+2} - Z_{t+1}$. It indicates that the M&A performance in each year after the M&As was declining, and there was a small rebound in the second year after the M&As, and the M&A performance was continuously improving.

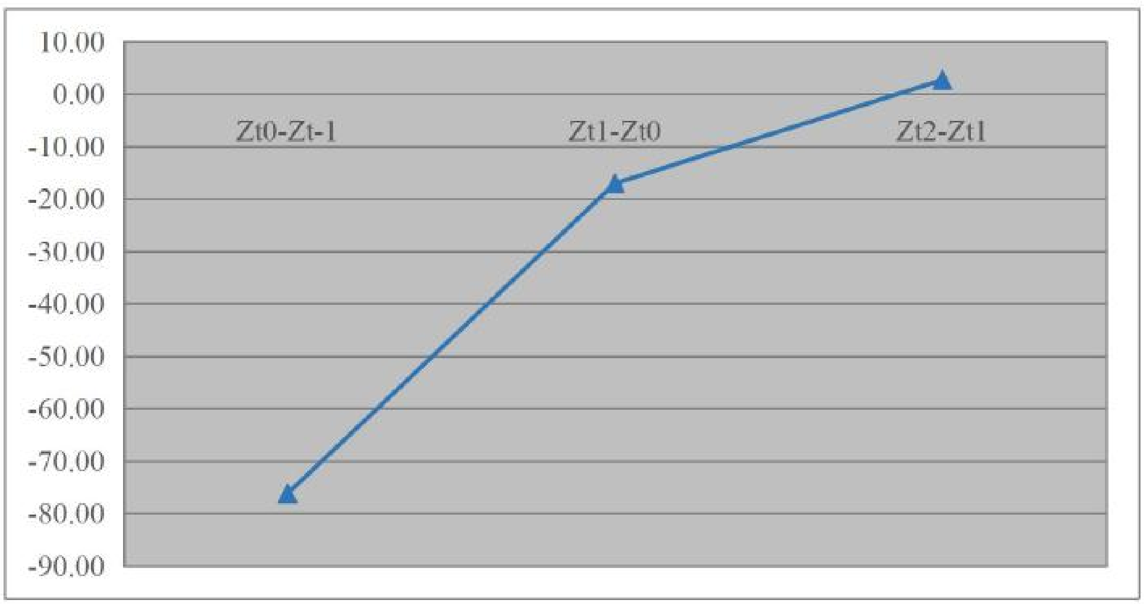


Figure 6-2 Comparison of comprehensive performance of the samples in each year before and after M&As

As can be seen from the comprehensive performance difference between the each year after the M&As and the year before the M&As in Figure 6-3, the M&A performance difference between at$Z_{t0} - Z_{t-1}$, $Z_{t+1} - Z_{t-1}$ and $Z_{t+2} - Z_{t-1}$ was -76.33, -93.24 and -

90.78 respectively, showing an overall trend of decreasing and then increasing. Performance deteriorated in the first year after the M&As compared to the year before the M&As, and performance in the second year after the M&As still deteriorated compared to that in the year before the M&As, but the degree of deterioration reduced.

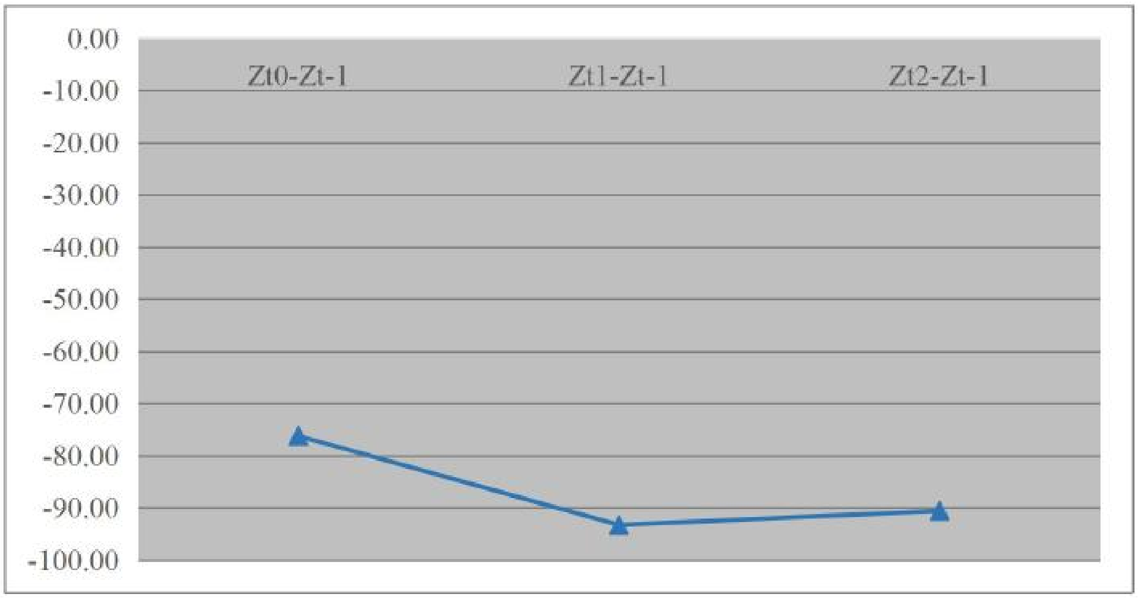


Figure 6-3 Comparison of comprehensive performance of the samples in the year of M&As and the year before the M&As

In general, the long-term performance of listed real estate companies on horizontal M&As was not satisfactory, especially in the year of the M&A; the M&A performance declined sharply by 209.24%, which may be due to the high M&A costs, or the drastic impact of the choice of cash payment on the normal operating activities of real estate developers, or the unfinished integration of the organization, systems, culture, etc. after the M&As. Performance continued to decline in the first year after the M&As, but the decline was much more moderate, and performance began to pick up in the second year after the M&As. The reason for this may be that with the steady integration of enterprises involved in M&As and target enterprises, companies involved in M&As emerged with a new look, and synergies and economies of scale came into play, making the M&A performance gradually improve.

6.5.2 Evaluating each factor for the long-term performance. By extracting the common factor, using the comprehensive performance score model to evaluate the M&A performance in each year before and after the M&As, next, this paper will use the above financial evaluation system to evaluate the average values of the solvency, profitability, operating capacity, development capacity and cash capacity of the companies involved in the M&As.

(1) Evaluating the average solvency in each year before and after the M&As

Table 6-15 Evaluation table of solvency indicators in study sample data

Year	2015	2016	2017	2018
Current ratio	2.31	2.03	1.81	1.76
Interest coverage ratio	233.71	13.31	9.99	12.10

Based on the solvency indicator averages in Table 6-15 below, it can be seen that the current ratio decreased year by year, and the interest coverage ratio decreased sharply in the year of the M&As and rose in the second year after the M&As.

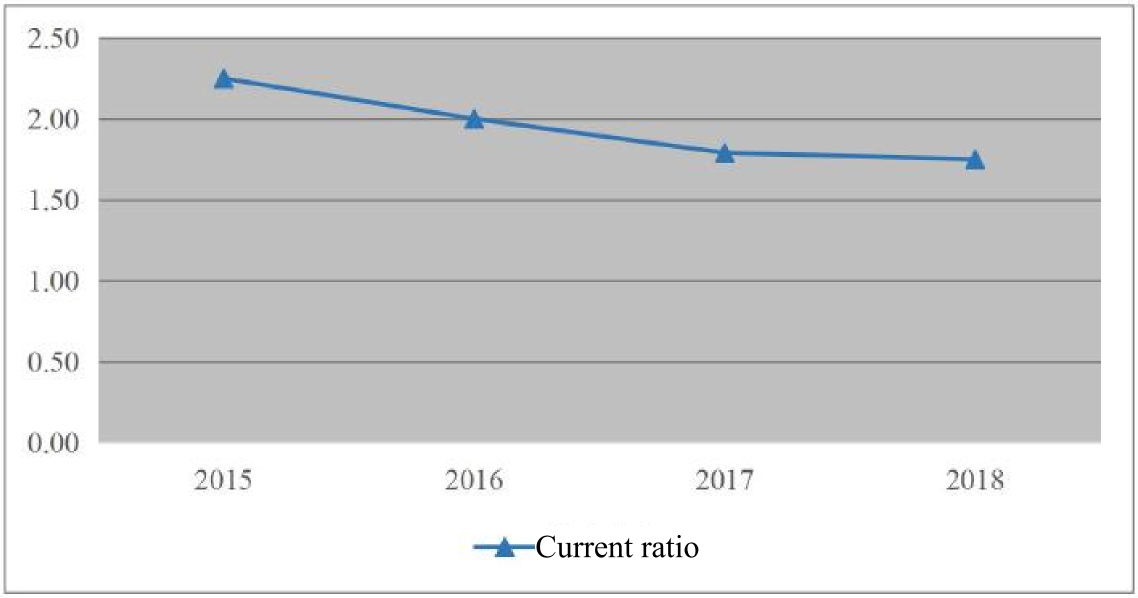


Figure 6-4 Variation of the current ratio of the samples

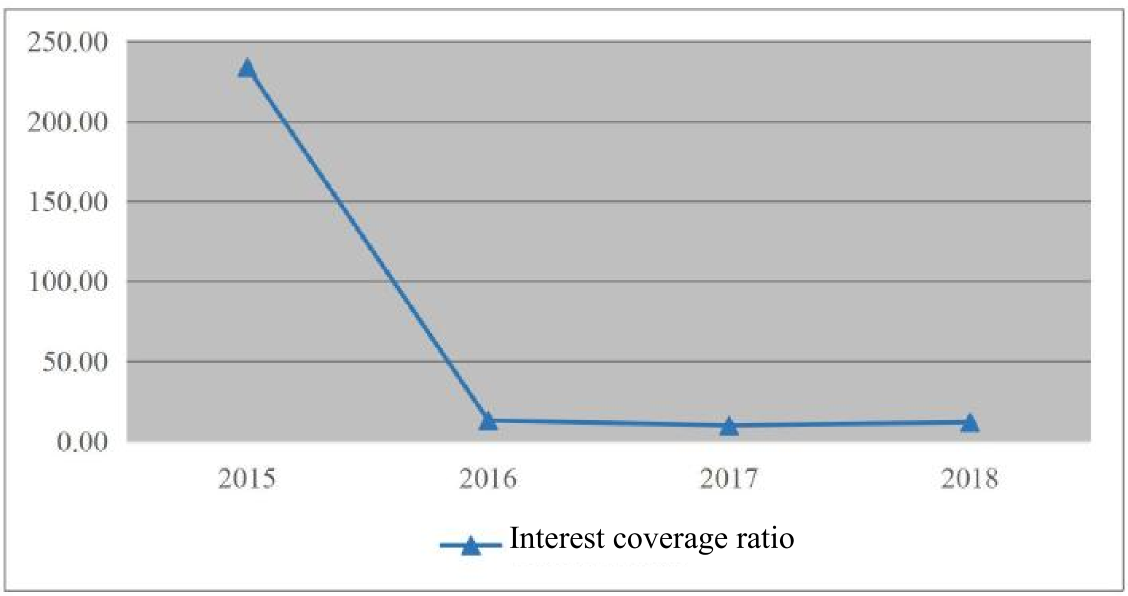


Figure 6-5 Variation of the interest coverage ratio of the samples

Based on the changes in the current ratio of the samples in Figure 6-4 above, it can be seen that the current ratio, an indicator of short-term solvency, decreased fast year by year, from 2.31 in 2015, the year before the M&As, to 1.81 in 2017, the first year after the M&As, and then continued to decrease moderately to 1.76 in 2018, the second year after the M&As. This sustained decline may be due to the fact that the cash payment for M&As, which resulted in insufficient liquidity and led to a sustained decline in the current ratio.

Based on the changes in interest coverage ratio of the samples in Figure 6-5 above, it can be seen that the long-term solvency indicator's interest coverage ratio dropped sharply from 233.71 in 2015, the year before the M&As, to 13.31 in 2016, the year of the M&As, probably due to the sharp increase in interest costs on the large borrowings at the time of the M&As. After that, the interest coverage ratio slowly declined to 9.99 in 2017 and rose slightly to 12.10 in the second year after the M&As. This may be due to the fact that operations were getting on track, so the solvency improved.

Overall, the solvency indicators declined in the first year after the M&As, and the short-term solvency continued to decline and the long-term solvency recovered in the second year after the M&As. This may be due to acquirer opting to pay M&A costs in cash.

(2) Evaluating the average operating capacity in each year before and after the M&As

Table 6-16 Evaluation table of operating capacity indicators in study sample data

Year	2015	2016	2017	2018
Receivable turnover	1191.21	566.83	395.10	217.84

From the evaluation table of operating capacity indicators in study sample data (as shown in Table 6-16 above), we can see that the receivable turnover decreased year by year, indicating that the M&As made the operating capacity of the acquirer decrease year by year. From the figure of receivable turnover, it can be seen that the receivable turnover of the acquirer had been decreasing year by year, from 1191.21 in the year before the M&As to 566.83 in the year of the M&As, which was attributable to the sharp decrease in the growth rate of revenue. The receivable turnover continued to decline moderately from the year of the M&As to the second year after the M&As. This may be caused by the fact that the growth rate of accounts receivable of the acquirer after the M&As was greater than the growth rate of revenue, or it may be due to the shortage of asset management ability of the enterprise after the expansion of its scale, resulting in the decline of its operating capacity.

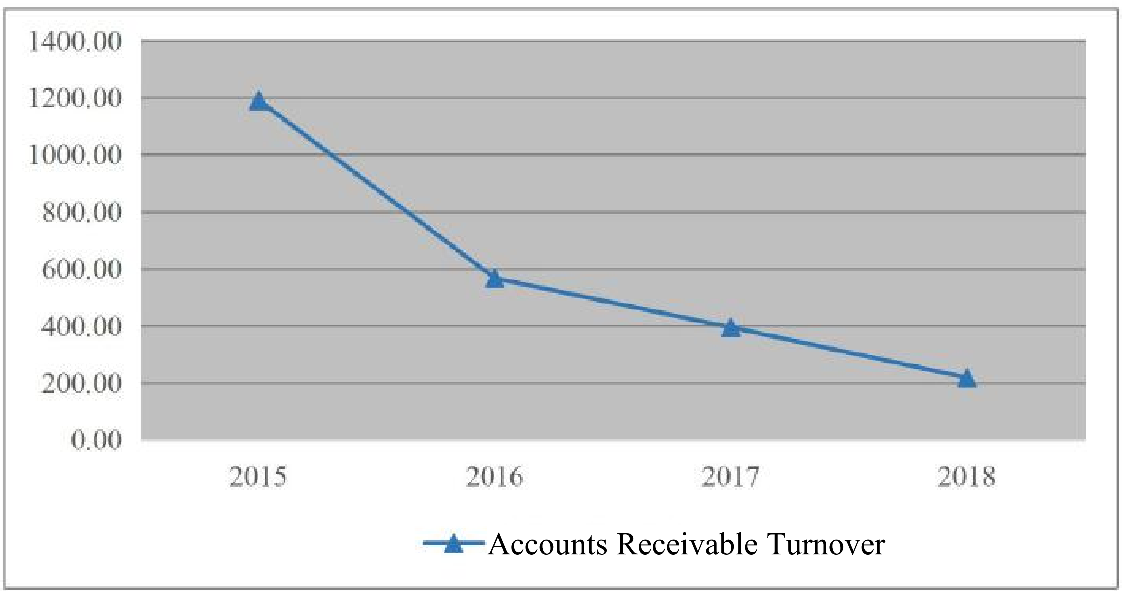


Figure 6-6 Changes in the receivable turnover in study sample data

(3) Evaluating the average development capacity in each year before and after the M&As

Table 6-17 Evaluation table of development capacity indicators before and after the M&As in study sample data

Year	2015	2016	2017	2018
Total capital growth rate (%)	31.04	35.01	30.01	20.42
Growth rate of revenue (%)	264.47	57.72	71.22	35.24

According to the evaluation table of development capacity indicators before and after the M&As in study sample data (as shown in Table 6-17 above), it can be seen that the total capital growth rate decreased year by year, and the growth rate of revenue decreased sharply in the year of the M&As, increased in the first year after the M&As, but decreased again in the second year after the M&As, which generally indicated that the M&As made the operating capacity of the acquirer decreased year by year.

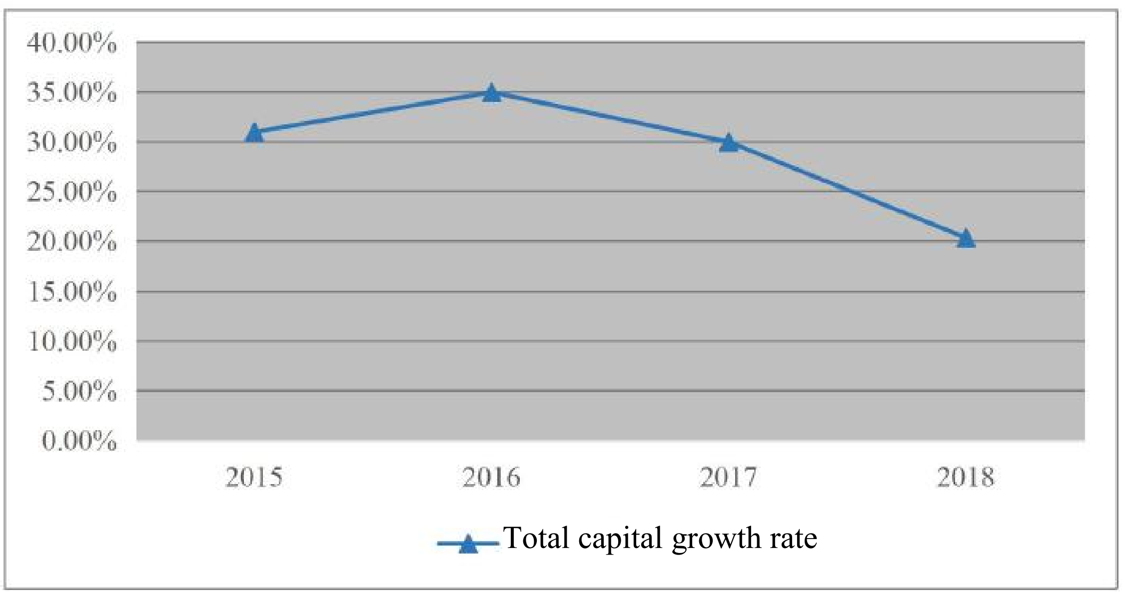


Figure 6-7 Changes in the total capital growth rates in study sample data

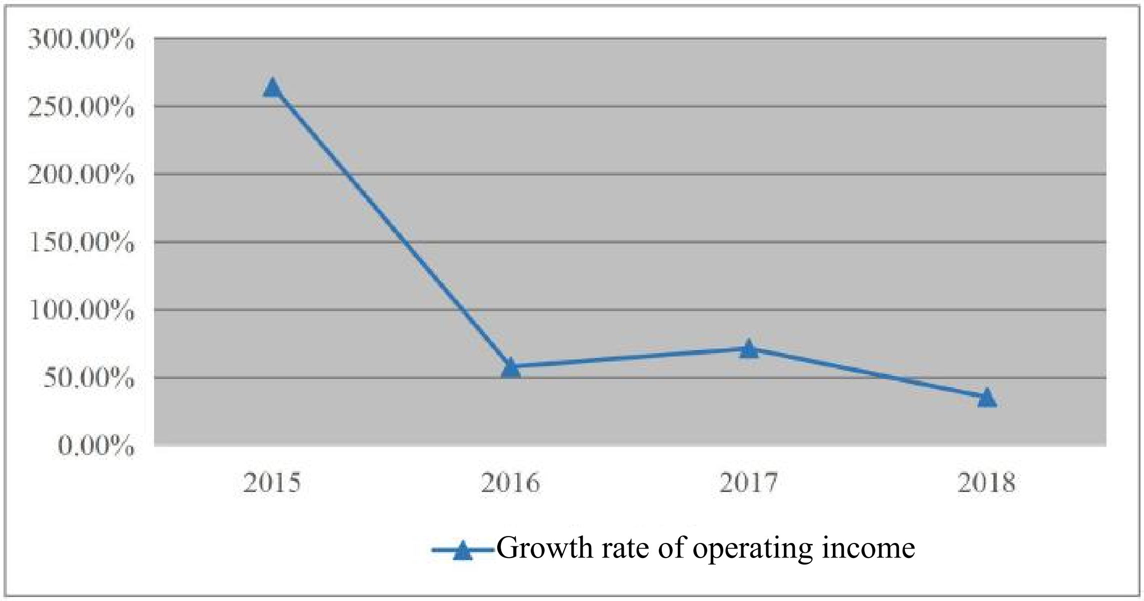


Figure 6-8 Changes in the growth rate of revenue in sample data

Based on the changes in the total capital growth rates in study sample data (as shown in Figure 6-7), we can see that the growth rate rose from 31.04% in the year before the M&As to 35.01% in the year of the M&As, which may be due to the rapid rise in acquirer's total assets caused by the horizontal M&As. After that, the total capital growth rates fell to 20.42% for two consecutive years, less than the level in the year before the M&As, possibly because of insufficient post-M&A integration and the fact that the synergies had not been brought into full play.

According to the growth rate of revenue in study sample data (as shown in Figure 6-8), we can know that the growth rate showed a sharp decline from 264.47% in 2015, the year before the M&As to 57.72% in 2016, the year of the M&As, which was due to the state's loose macro-control policies for property market in 2015. The 2016-2017 period saw a rise in revenue growth rate, possibly due to the synergies of horizontal M&As and loose market conditions. From 2017, the first year after the M&As, to 2018, there was a large decline, probably due to the government's tightening of "monetary policy" in the second half of 2017.

(4) Evaluating the average cash capacity before and after the M&As

Table 6-18 Evaluation table of cash capacity indicators before and after the M&As in study sample data

Year	2015	2016	2017	2018
Revenue to cash ratio (%)	101.72	103.84	98.16	78.13

According to the evaluation table of cash capacity indicators in study sample data (as shown in Figure 6-18), we can see that the total capital growth rates decreased year by year, and the growth rate of revenue decreased sharply in the year of the M&As, increased in the first year after the M&As, but decreased again in the second year after the M&As, generally indicating that the M&As made the operating capacity of the acquirer decreased year by year.

According to the changes in revenue to cash ratio in study sample data (as shown in Figure 6-9), we can see that the cash ratio increased in 2016, the year of the M&As, probably due to acquirer's strategy of encouraging full payment in house purchase due to cash shortage. The decline in cash ratio from 2016, the year of the M&As, to 2018, the second year after the M&As, may be due to post-horizontal M&A synergies, better real estate sales and increase in mortgage receivables.

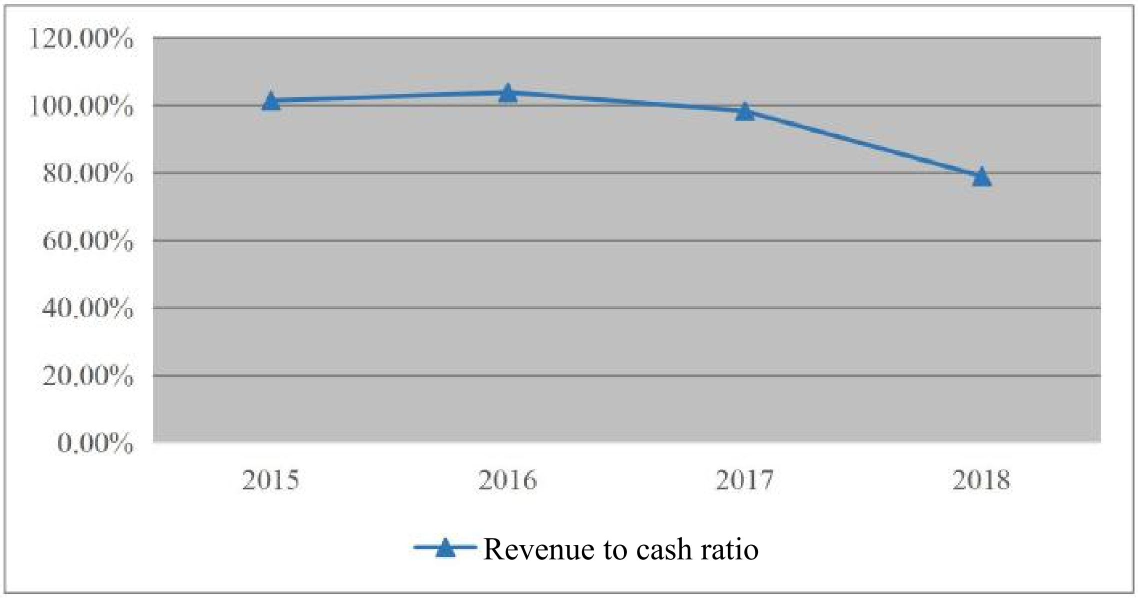


Figure 6-9 Changes in the revenue to cash ratio in study sample data

(5) Evaluating the average profitability in each year before and after the M&As

Table 6-19 Evaluation table of profitability indicators before and after the M&As in study sample data

Year	2015	2016	2017	2018
Net operating margin (%)	1.73	9.01	14.19	15.41
Return on equity (%)	8.49	9.00	11.01	11.21
Profit to cost ratio (%)	6.51	16.51	23.99	26.14

Based on the evaluation table of average profitability indicators in study sample data (as shown in Figure 6-19), we can see that the net operating margin, return on equity and profit to cost ratio were rising year by year, indicating that the M&As made the acquirer's profitability rise year by year.

According to the changes in the profit to cost ratio in study sample data (as shown in Figure 6-10), we can see that the acquirer's profit to cost ratio in each year before and after the M&As gradually increased, but the rate of increase decreased year by year. It rose from 6.51% in the year before the M&As to 16.51% in the year of M&As, continued to rise to 23.99% in the first year after the M&As, and finally to 26.14%. This shows that the acquirer's cost and expense control after the M&As was better and better and unit cost could save higher profit, which should benefit from the scale effect after horizontal M&As.

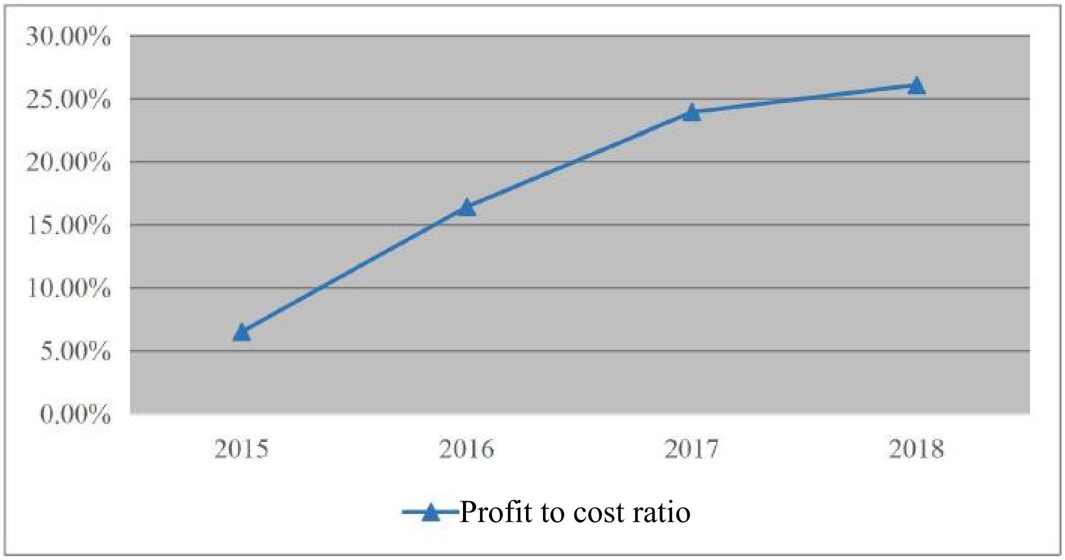


Figure 6-10 Changes in the profit to cost ratio in study sample data

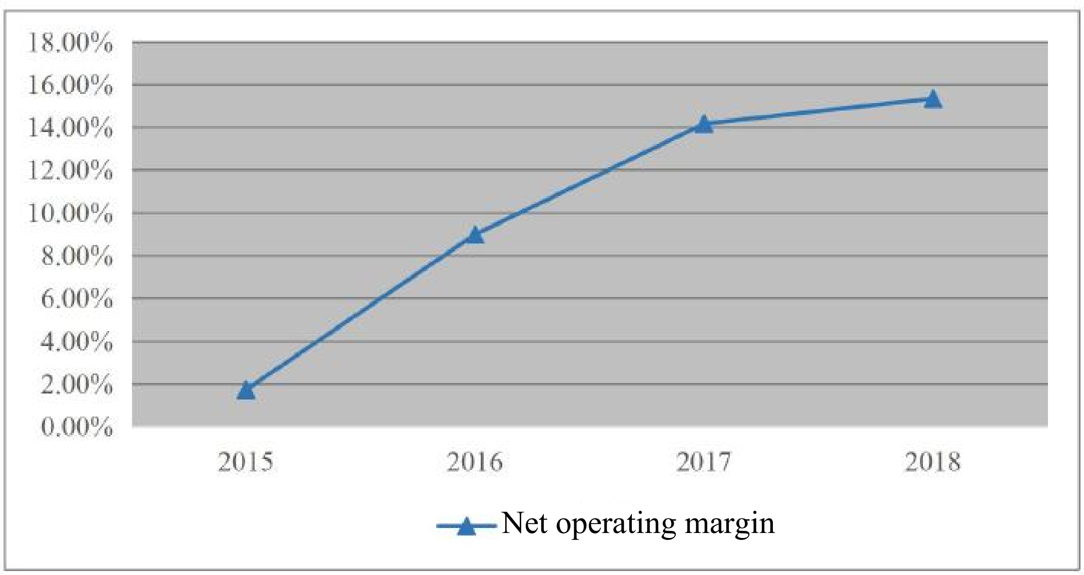


Figure 6-11 Changes in the net operating profit margin in study sample data

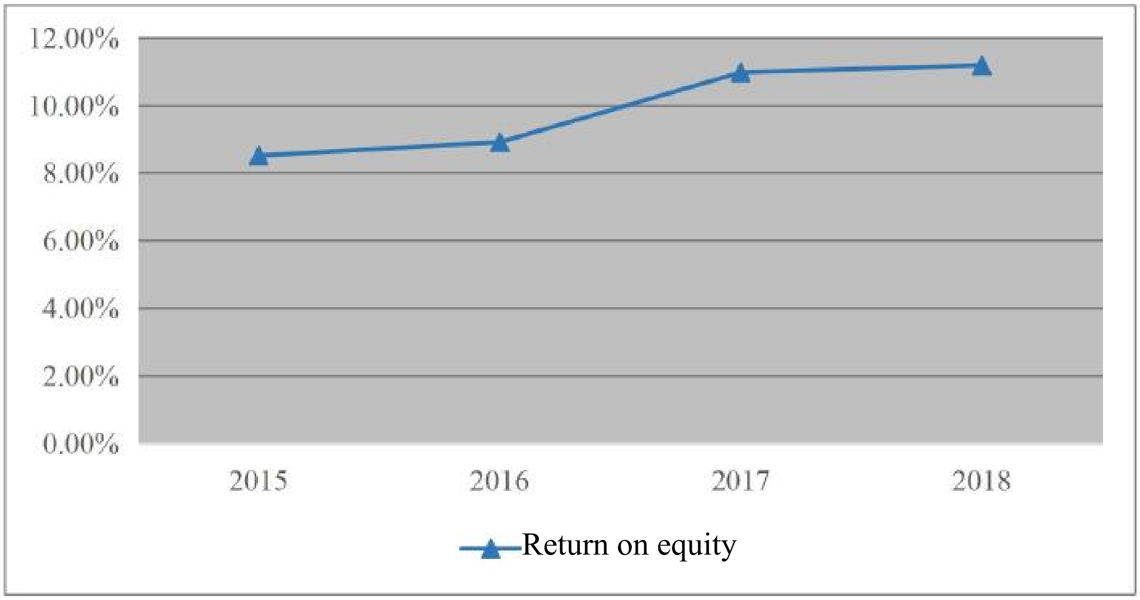


Figure 6-12 Changes in the return on equity in study sample data

Based on the changes in net operating margin in study sample data (as shown in Figure 6-11), we can see that the trend of the net operating margin of the acquirer was consistent with that of the profit to cost ratio. In each year before and after the M&As, the net operating margin gradually increased, but the rate of increase also declined year by year. It rose from 1.73% in the year before the M&As to 9.01% in the year of M&As, continued to rise to 14.19% in the first year after the M&As, and finally to 15.41%. This shows that the acquirer's cost and expense control after the M&As was better and better, the revenue could create higher profit.

Based on the changes in the return on equity in study sample data (as shown in Figure 6-12), we can see that the acquirer's return on equity was rising significantly year by year, from 8.49% in 2016, the year of the M&As, to 11.01% in 2017, the first year after the M&As. The rise from 8.49% in the year before the M&As to 9.00% in the year of the M&As may be due to a rise in the leverage contribution caused by the borrowings used to pay M&A expenses. The rise from the year of the M&As to the second year after the M&As may be due to the increase in the acquirer's profitability as a result of post-horizontal M&A synergies.

Overall, the profitability of the acquirer was rising from the year before the M&As to the second year after the M&As. For example, the net operating margin rose from 1.73% to 15.41%. But the rise was decreasing year by year, and the trend was getting flatter and flatter. This rise benefited from the synergies of horizontal M&As. After horizontal M&As, the operating costs and expenses for the acquirer to obtain scale effect were falling, and revenue was rising, and profitability was improving.

6.6 Review of the long-term performance of horizontal M&As on Chinese real estate developers

On the whole, the comprehensive performance score on the horizontal M&As showed a sharp decline first and then a slow rise. Performance declined significantly in the year of the M&As and continued to decline in the first year after the M&As, but the decline was more moderate than in the previous year. Performance began to rise in the second year after the M&As, but the rise was relatively moderate. According to the financial capability performance of the acquirer in horizontal M&As:

First, solvency performance. The solvency indicators declined in the first year after the horizontal M&As, and the short-term solvency continued to deteriorate in the second year after the M&As, but the long-term solvency recovered. This continued decline may have something to do with the acquirer's opting to pay M&A costs in cash.

Second, profitability performance. The profitability of the acquirer was rising from the year before the M&As to the second year after the M&As, but the increase was declining year by year. This increase may benefit from the synergies of horizontal M&As.

After horizontal M&As, the operating costs and expenses for the acquirer to obtain scale effect were decreasing, and revenue was rising, and profitability was improving.

Third, operating capacity performance. The operating capacity of the acquirer was gradually decreasing from the year before the M&As to the second after the M&As, and the decrease tended to level off year by year, which may be due to the decline of the operating capacity as a result of the insufficient asset management capacity after the business expansion.

Fourth, development capacity performance. The acquirer's total asset growth peaked in the year of the M&As and continued to decline in the next two years. This may be due to the acquirer's slow asset growth in subsequent years, taking into account the consolidation of resources after the M&As.

Finally, cash capacity performance. The acquirer's revenue to cash ratio rose and then fell, possibly because the acquirer needed cash urgently in the year of the M&As and encouraged cash receipts in revenue, while it needed to expand revenue and lower revenue standards two years after the M&As, resulting in a deterioration of cash capacity.

CHAPTER 7

CASE ANALYSIS OF IMPACTS OF HORIZONTAL M&AS ON PERFORMANCE OF CHINESE REAL ESTATE ENTERPRISES

Vanke, as the leading real estate developer, is regarded as the "barometer" of China's real estate industry and plays an extremely important role in guiding the development of China's real estate developers. Vanke's M&A of Nacity is highly representative as it is the largest M&A in China's real estate M&A market. Based on the in-depth theoretical study above, this Chapter conducts an in-depth study on Vanke's M&A of Nacity through a case study. Using the M&A performance evaluation system constructed in the foregoing, the results and efficiency of Vanke's M&A are analyzed in terms of both short-term wealth effect and long-term business performance to explore the impact of the M&A on Vanke and find the "key points" that determine the M&A performance of real estate developers from the case.

7.1 Overview of Vanke's M&A of Nacity Real Estate

7.1.1 Introduction to Vanke and overview of its equity. (1) Introduction to Vanke

Established in May 1984, China Vanke CO., LTD. is one of the first batch of publicly listed companies in the Chinese mainland. In December 1988, Vanke was restructured through demutualization and issued 41.3327 million A-shares to the public. Its assets and operation scale expanded rapidly and its operation system was completely transformed. In 1991, it was successfully listed on the Shenzhen Stock Exchange, becoming the second listed company on the Shenzhen Stock Exchange. Vanke now focuses on real estate, especially the development of middle and high-grade urban residential housing. It has won many honors such as "First Prize of Architectural Design of the Ministry of Construction", "Luban Award of China Construction Engineering" and "Excellent Model Community in National Urban Property Management". It has been ranked first in the list of "Comprehensive Strength of China Real Estate Developers" for nine consecutive years, and is the first real estate developer with RMB 100 billion sales in China, and has the title of "No. 1 Brand of China Real Estate".

(2) Equity structure of Vanke

Compared with most enterprises, Vanke's shareholding structure is relatively special. It is owned by the public, and there is no actual controller or controlling shareholder. China Resources, the largest shareholder of Vanke, only holds 14.73% of the total equity of Vanke. China Resources Co., Ltd. was established in June 2003 by the China Resources Corporation by means of sponsorship. Its industries include strategic investment, commercial retail, electronic technology, construction and decoration.

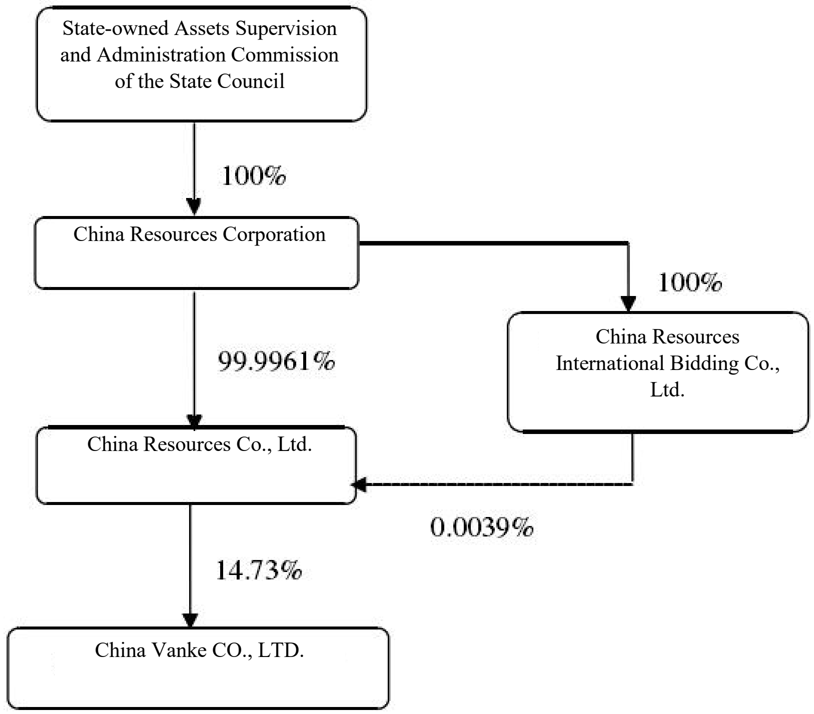


Figure 7-1 Schematic diagram of equity structure of Vanke

7.1.2 Introduction to Nacity Real Estate and overview of its equity. (1) Introduction to Nacity Real Estate

Founded in 1991, Nacity Group is a large conglomerate specializing in real estate, financial services, infrastructure, telecommunications and web-based information. The group includes three enterprise groups and two listed companies.

In 1993, by establishing Zhejiang Nacity Real Estate Group, it entered the real estate field, and successfully entered the Hangzhou market, and successfully built a number of real estate projects such as Nacity Garden, Nacity Tianshuiyuan, Nacity Linyu Villa and Nacity Fifth Ring Plaza. Its market share is about 10% of Hangzhou market. Taking Hangzhou as the base and the Yangtze River Delta as the key development area, it has developed the real estate markets in Shanghai, Ningbo and other cities. Nearly 1,000 hectares of development land has been reserved in Hangzhou, Shanghai, Ningbo, Nanjing, Changsha and other places for the development of diversified real estate projects such as urban housing, tourism landscape property, and business & technology properties. It has formed the strategic deployment with Hangzhou, Shanghai and Ningbo as the center, and the cities along the Shanghai-Hangzhou and Shanghai-Ningbo Expressway as the market extension, laying its position as the leader in the real estate industry in Jiangsu and Zhejiang.

(2) Equity structure of Nacity Group

Shanghai Zhongqiao Infrastructure (Group) Co., Ltd. is a subsidiary of Nacity Group. Its main business covers the construction, operation and management of highways, tunnels, bridges, water supply and environmental protection facilities. It has invested in urban infrastructure since 1995, with toll roads being the main projects; it has entered the real estate development field since 2000. The main business income of Zhongqiao mainly comes from toll roads, and the real estate development business has entered the payback period since 2004.

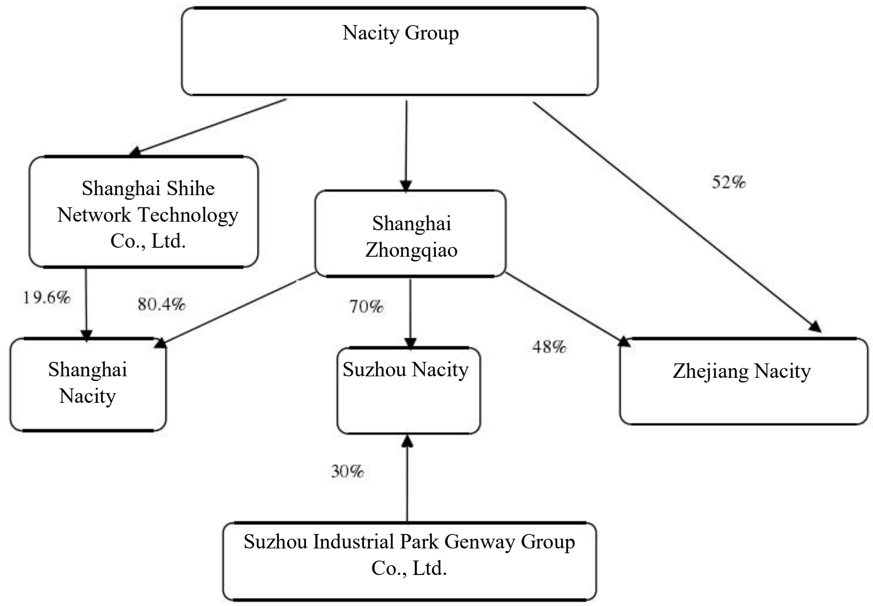


Figure 7-2 Schematic diagram of equity structure of Nacity Group

7.2 M&A Process

7.2.1 Motivators for horizontal M&As. (1) Reasons for Nacity Group to abandon the real estate business

As Nacity Real Estate's position in the real estate market in the Yangtze River Delta can be described as pivotal, the outside world was puzzled by Nacity Group's move to transfer its equity in its property business. In fact, long before the M&A, Nacity Real Estate has been in a series of difficulties: the industry situation was grim; important investors withdrew capital; IPO plans were stranded; the capital chain was tightening; debt ratio was high; it was facing major operational risks. By the end of 2004, Nacity Real Estate's total liabilities amounted to RMB 5,14617 billion, with a debt-asset ratio of 84.32%, far greater than the average debt-asset ratio of 74.1% of the real estate industry in 2004 ("First National Economic Census Data Bulletin"). The high debt-asset ratio revealed Nacity Real Estate's potential operating risk. That was, once the financing channel was affected by the market risk, Nacity Real Estate might face a huge capital gap and capital chain breakage, so the operating risk was great. In fact, before the M&A, Nacity Real Estate was already in the midst of a cash crunch.

In 2004, China's economy continued to maintain its strong posture of high growth, and at the same time, the phenomenon of overheating of investment in local areas and industries also appeared, especially in the rapidly developing real estate industry. Whether there is a serious bubble in China's real estate industry has aroused extensive discussion among experts, scholars and departments. Xie Guozhong, a famous economist, directly pointed out that there was a serious real estate bubble in China. Although the word "bubble" has been controversial in all circles and has not been definitively determined, the rapid development of China's real estate industry and the existence of "excessive housing prices" in first-tier cities represented by Shanghai are indisputable facts. In the face of the "overheating" of the real estate industry, the government has actively introduced relevant policies to carry out macro-control on the real estate industry. 8.31 On August 31, 2004, the assignment of land by agreement shall be completely stopped; the central bank raised interest rates to further increase the cost of credit; the central bank tightened the monetary policy to increase the capital ratio of fixed asset investment projects in real estate projects. Some banks raised the down payment ratio of housing loans, etc. Under the strong control of the government, the first significant drop in housing prices occurred in 2004, which was destined to be a worrying year for many real estate developers, and for Nacity, it was undoubtedly a year of "internal and external problems".

In the second half of 2003, Nacity Group's holding subsidiary Shanghai Zhongqiao faced the withdrawal of capital by two international shareholders. The total investment amount of the two investors was USD 32.2 million. Because they held 80.4% equity of Shanghai Nacity, 70% equity of Suzhou Nacity and 48% equity of Zhejiang Nacity, the withdrawal cut off an important part of Nacity Real Estate's funding sources. The original plan to raise funds through IPO was also abandoned due to many issues such as peer competition. The cancellation of IPO in 2004 cost Nacity Real Estate nearly RMB 400 million of capital support. At the same time, Xu Guangyue, the president of Nacity Real Estate, who worked side by side with Zhou Qingzhi, the "head" of Nacity Group, left Nacity, taking away about the projects representing 20% shares of Nacity Real Estate and a large number of Nacity's talents and elites. Under the great macro-control of the real estate industry, Nacity Real Estate experienced a series of blows such as "investors' capital withdrawal", "listing revocation" and "high-level talent departure". Nacity Real Estate had a capital shortage, facing huge operating risks and crises. Seeking new partners and strategic investors to rapidly inject capital became an inevitable choice for Nacity.

If the first step of cooperation between Vanke and Nacity did not make clear the ultimate intention of Nacity, in the second step of cooperation, the purpose of Nacity gradually became clear. When the outside world speculated that Nacity only made the move of giving out part of its equity and projects for the purpose of financing, Nacity and Vanke further cooperated, and Vanke successfully took ownership of Zhejiang Nacity. The speculation that Nacity was ready to adjust its strategy to take root in Zhejiang and focus on the development of real estate business in Zhejiang with high quality resources was broken again. In fact, Nacity Group made the decision to withdraw from the real estate industry, taking into account the changing circumstances of the whole real estate industry.

(2) Reasons for Vanke's M&A of Nacity

Vanke gained a lot from this M&A. The acquisition of land resources and the expansion of its strategic map were the ultimate objectives of Vanke's M&A of Nacity.

First, the acquisition of land resources laid the foundation for the development of enterprises in the Yangtze River Delta. With the rising land prices in the primary market of real estate nationwide, the urban land price in cities in Zhejiang Province, represented by Hangzhou, was rising all the way. It was very difficult for many large enterprises to obtain land in Hangzhou and other places, so the way of obtaining land resources through the secondary market was gradually showing advantages in this big environment. Nacity's development projects were mainly concentrated in Shanghai, Suzhou, Hangzhou, Ningbo and other Yangtze River Delta regions, with nearly 1,000 hectares of land reserve, which was needed by Vanke to expand its business territory and increase its strategic deployment. It laid the foundation for Vanke to enter the Yangtze River Delta region, especially Zhejiang market.

Secondly, expand the strategic territory, enter the Yangtze River Delta market, and complete the corporate strategic layout. According to the urban circle focus strategy, Vanke would mainly invest in the Yangtze River Delta, Pearl River Delta, Bohai Rim, Pan-Pearl River Delta and other urban economic circles. The Yangtze River Delta, as China's largest, fastest growing and most dynamic urban economic circle, was also an area to which Vanke attached great importance. Zhejiang market was always a blank part of Vanke in this region, and Nacity was a real estate predator in this region, with good corporate brand image, rich land resources and projects, competitive market share and other quality resources, and had a pivotal position in the real estate market in the Yangtze River Delta, especially in Zhejiang Province. Through the M&A of Nacity Real Estate, Vanke was able to successfully enter Zhejiang market, further expand the Yangtze River Delta market, and complete Vanke's strategic layout in the Yangtze River Delta through Nacity Real Estate's original brand and regional advantages.

7.2.2 Specific process of horizontal M&As. After three equity swaps, Vanke spent a total of RMB 4.01651 billion, and finally obtained 100% control of Nacity's real estate business. Table 7-1 below is a brief introduction to the three equity swaps between Vanke and Nacity.

Table 7-1 Table of the process of Vanke's horizontal M&A of Nacity

M&A process	First equity swap	Second equity swap	Third equity swap
Date	March 3, 2005	August 3, 2006	March 20, 2007
Parties to the transaction	Zhongqiao, Shanghai Vanke, Vanke Pudong, Shenzhen Vanke	Zhongqiao side (Nacity Industrial, Nacity Holdings, Zhongqiao), Vanke Co., Ltd., Shanghai Vanke	Zhongqiao side (Nacity Industrial, Nacity Holdings, Zhongqiao), Vanke
Underlying equity	70% equity of Shanghai Nacity, 49% equity of Suzhou Nacity and 20% equity of Zhejiang Nacity held by Zhongqiao and the corresponding shareholders' equity	30% equity of Shanghai Nacity, 21% equity of Suzhou Nacity and 60% equity of Zhejiang Nacity held by the Zhongqiao side and the corresponding shareholders' equity	20% equity of Zhejiang Nacity held by the Zhongqiao side and the corresponding shareholders' equity
Transaction details	Zhongqiao transferred 70% of its equity in Shanghai Nacity to Vanke Pudong and Shenzhen Vanke, wholly-owned subsidiaries of China Vanke CO., LTD., with Vanke Pudong receiving 40% equity and Shenzhen Vanke receiving 30% equity; Zhongqiao transferred 49% of its equity in Suzhou Nacity to Shanghai Vanke; Zhongqiao transferred its 20% equity in Zhejiang Nacity to Shanghai Vanke	Zhongqiao side transferred its 30% equity in Shanghai Nacity to Shanghai Vanke, a wholly-owned subsidiary of China Vanke CO., LTD.; Zhongqiao side transferred its 21% equity in Suzhou Nacity to Vanke Co., Ltd.; Zhongqiao transferred its 60% equity in Zhejiang Nacity to Shanghai Vanke	20% of the equity of Zhejiang Nacity held by the Zhongqiao side Equity transfer to Vanke
Amount	RMB 1,857.63 million	RMB 1,765.33 million	RMB 393 million
Terms of payment	Payable in cash in four installments within two years	Payable in cash in four installments within one year	Payable in cash in two installments within one year

Table 7-1 (continued)

M&A process	First equity swap	Second equity swap	Third equity swap
Results of M&As	After the completion of the transactions, Vanke would become the controlling shareholder of Shanghai Nacity and Suzhou Nacity and make equity participation in Zhejiang Nacity with sufficient resources, providing strong support for the further expansion of the company's operation and development scale. Vanke successfully obtained three of the five seats on Shanghai Nacity's board of directors, two of the five seats on Suzhou Nacity's board of directors and two of the seven seats on Zhejiang Nacity's board of directors, and obtained priority for future Zhongqiao side-related projects.	Through the transaction, Vanke held 100% equity in Shanghai Nacity, 80% equity in Zhejiang Nacity and 70% equity in Suzhou Nacity. It took full control of the real estate business of Nacity. At the same time, Zhejiang Nacity Real Estate renamed Zhejiang Vanke Nacity Real Estate Development Co., Ltd. (Vanke Nacity), and re-elected the board of directors. In the new board of directors, Vanke Group and Nacity Group would have four seats and one seat respectively. The former president of Nacity Real Estate served as chairman of Vanke Nacity, while the post of general manager was held by the former general manager of the Project Management Department of Vanke Group.	Upon completion of the transaction, Vanke would hold 100% equity in Zhejiang Nacity.

Vanke finally controlled Nacity's real estate business through two important equity swaps. Through the first equity swap in March 2005, Vanke obtained the actual control of Shanghai Nacity and Suzhou Nacity, became the actual controller of Nacity

Group's two real estate subsidiaries and successfully made equity participation in Zhejiang Nacity. In August 2006, on the basis of the first equity swap, Vanke continued to increase its equity in Shanghai Nacity, Suzhou Nacity, and Zhejiang Nacity, and successfully controlled Zhejiang Nacity. From the perspective of M&As, the two equity swaps satisfied the definition of M&As, so they are the focus of the following study of M&A performance in this paper.

7.3 Evaluation of the performance of Vanke Real Estate in horizontal M&As

7.3.1 Evaluation of the short-term performance of M&As. This paper adopts the event study method to examine the market reaction before and after the announcement date of the two equity swaps and calculates the daily abnormal return and the cumulative abnormal return during the event window period, which are used to measure the impact of the M&A and examine the short-term performance of the two equity swaps brought to the shareholders of Vanke.

(1) Selecting the event window

This paper measures the short-term M&A performance by calculating the abnormal returns for a total of 31 trading days in [-15, 15], with centering on the release time of M&A announcements, i.e., the announcement date of each M&A, which is identified as 0, and 15 trading days before and after the release time selected as the window period for this study.

(2) Calculating the expected return

[-215, -16], i.e. 200 trading days are selected as the estimation window, and the expected return is calculated using the mean model.

$$R_i = \sum_{t=-215}^{-16} R_{it}/200 \tag{7-1}$$

Where, R_i is the expected return (also known as the normal return) of Stock i; R_{it} is the normal return acquired by Stock i on Day t.

(3) Calculating the excess return of stocks

Calculate the daily excess return for 31 trading days in the event window period [-15, 15], and then sum the 31 daily excess returns to obtain the cumulative excess return.

$$AR = R_i - R_{it} \tag{7-2}$$

$$CAR = \sum_{t=-15}^{15} AR \tag{7-3}$$

(4) Research data

Table 7-2 CARdata during Vanke's M&A of Nacity

	First equity swap	Second equity swap
CAR(cumulative excess return)	0.063726431	0.023114457

From the perspective of cumulative excess return, both Vanke and Nacity obtained positive benefits from the two equity swaps. Investors were optimistic about Vanke's M&A of Nacity and had a positive outlook on the outcome and prospects of the M&A. From the perspective of the daily cumulative excess return, the daily cumulative excess return before the date of the first equity swap announcement was large, and it was likely that Vanke's M&A information was leaked in advance.

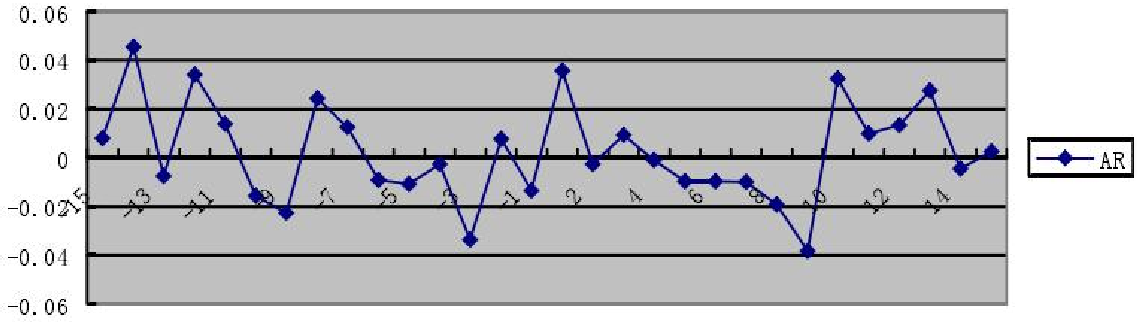


Figure 7-3 CAR changes before and after the first equity swap announcement

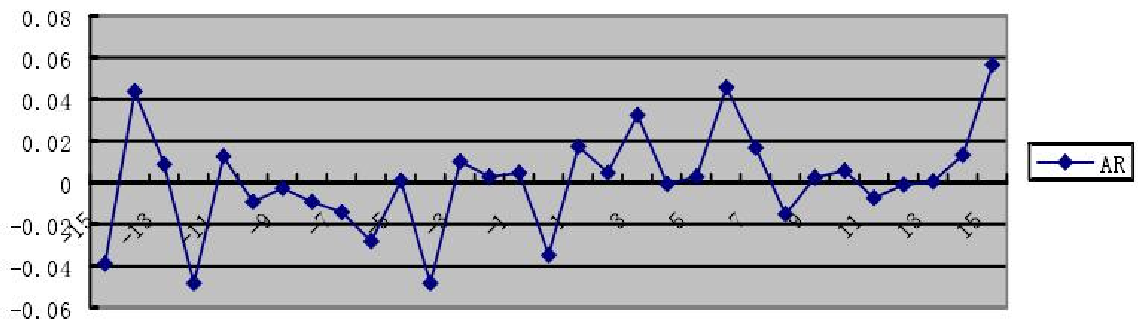


Figure 7-4 CAR changes before and after the second equity swap announcement

7.3.2 Evaluation of long-term M&A performance. (1) Long-term operating performance evaluation based on financial indicators

The changes in the business performance of enterprises before and after M&As will be most directly revealed in the financial indicators of enterprises. Based on the M&A performance evaluation system constructed in the foregoing, the financial performance of Vanke on its M&A of Nacity in the year before, the year of and three years after the M&A is analyzed and studied in the following four aspects.

In view of Vanke's actual control over the entire Nacity Group's real estate business after the second equity swap, this paper regards the end of the second equity swap as the end of the M&A, and the third equity swap as the follow-up transaction after the M&A in the study of the operating performance of Vanke. Since the first equity swap and the second equity swap occurred on close dates, the effects of long-term business performance were difficult to isolate, and both swaps were important to Vanke's M&A of Nacity Real Estate. Therefore, this paper combines the first two equity swaps as a M&A to evaluate and study the overall performance on the M&A between Vanke and Nacity.

Since Vanke has always been in the leading position of the real estate industry, it is difficult to fully reflect its performance changes by directly comparing its financial performance with that of the whole industry. Therefore, this paper selects eight listed real estate enterprises in Shanghai and Shenzhen that ranked top in terms of comprehensive strength and developed more steadily from 2004 to 2012, and studies their business performance in the same period to derive the average value data of financial indicators for each year, so as to facilitate the longitudinal comparison of Vanke's performance before and after the M&A with that of similar enterprises. (8 enterprises: Poly Developments (600048), Lujiazui (600665), China Merchants Property Development (0000024), Financial Street (000405), North Star (601590), Gemdale Group (600386), China Enterprise (600678) and Vanke (000002)).

(1) Growth capacity analysis

Table 7-3 Evaluation table of Vanke's growth ability before and after the M&As

Year	2010	2009	2008	2007	2005	2004
Growth rate of main business revenue	19.25	15.38	98.29	68.84	38.51	20.23
Comparison with similar enterprises	52.87	21.20	54.59	36.71	10.68	35.10
Net profit growth rate	38.60	-12.54	119.50	71.23	55.17	61.34
Comparison with similar enterprises	53.49	0.4593	98.09	53.32	38.39	55.39

Table 7-3(continued)

Year	2010	2009	2008	2007	2005	2004
Total capital growth rate	15.39	19.17	100.48	117.94	47.47	47.17
Comparison with similar enterprises	34.00	32.61	75.69	63.74	25.53	41.72

The occurrence of the M&A led to a significant improvement in Vanke's growth capacity indicators. After the M&A, Vanke's growth rate of revenue from primary business in the first year after the M&A was about 5 times that in the year before the M&A, and the growth rates of net profit and total assets were about 2 times those in the year before the M&A. Such figures were also greater than the average values of similar enterprises. The M&A with Nacity rapidly improved Vanke's revenue from primary business, net profit and total assets and enlarged its scale. In the second year after the end of the M&A, the three indicators dropped rapidly and were even lower than the average values of the indicators of similar high-quality enterprises nationwide. In the third year after the M&A, the growth rate of revenue from primary business and the growth rate of net profit rebounded, but the values of the three indicators were still lower than the average values of the indicators of similar enterprises. After the completion of Vanke's cooperation with Nacity, the growth capacity improved significantly, especially in the year of the M&A and the first year after the M&A. But it had insufficient sustained strength for capacity growth.

(2) Profitability

Table 7-4 Evaluation Table of Vanke's Profitability before and after the M&A

Year	2010	2009	2008	2007	2005	2004
Return on net assets	14.31	12.73	16.61	14.50	16.29	14.17

Table 7-4 (continued)

Comparison with similar enterprises	11.81	10.38	15.19	13.24	16.49	16.67
Return on total assets	5.01	4.25	7.10	6.59	7.41	7.00
Comparison with similar enterprises	5.34	4.51	7.36	6.37	6.00	5.71
Profit from main business	22.04	27.99	30.46	27.33	27.61	25.23
Comparison with similar enterprises	32.61	35.56	33.80	32.00	33.21	28.49

The ups and downs of the three profitability indicators of Vanke after the M&A were obvious, and the overall trend of the return on equity was similar to the trend of the average value of the indicator of similar high-quality enterprises. Meanwhile, over time, the value of the indicator of Vanke's return on equity gradually exceeded the average value of the indicator of similar high-quality enterprises, and the advantage was gradually obvious, indicating that the impact of the M&A on Vanke's return on equity gradually appeared. In contrast, the performance of the two indicators of return on total assets and revenue from primary business was not satisfactory. The changes in the two indicators were in line with the trends of the high-quality similar enterprises, but with the end of the M&A, the gap in terms of the two indicators between Vanke and the similar high-quality enterprises was getting bigger and bigger, with the former obviously lower than the latter, which was probably due to the fact that after the M&A, the growth of net profit was smaller than the expansion of asset scale and the profitability of the new projects was not satisfactory enough.

(3) Analysis of solvency

Table 7-5 Evaluation table of Vanke's solvency before and after the M&A

Year	2010	2009	2008	2007	2005	2004
Current ratio	1.95	1.76	1.96	2.19	1.96	2.41
Comparison with similar enterprises	2.10	2.19	1.99	1.96	1.80	1.90
Asset-liability ratio	67.11	67.45	66.12	65.04	61.10	59.51
Comparison with similar enterprises	63.44	60.98	60.42	60.97	59.37	56.92

Vanke's debt-asset ratio generally showed an upward trend after the M&A. Especially compared with the debt-asset ratio in the year before the M&A, the increase was significant and obviously exceeded the average value of the debt-asset ratio of similar enterprises. In the two years after the completion of the M&A, the debt-asset ratio was at a high level compared with similar enterprises until the third year after the completion of the M&A, when the gap between the debt-asset ratio of Vanke and that of similar enterprises gradually narrowed. The M&A obviously weakened Vanke's long-term solvency until the third year after the M&A. With the full payment of the M&A price, Vanke's solvency increased slightly.

The short-term solvency shown by the current ratio was similar to the changes in long-term solvency. The short-term solvency was more affected by the M&A, and it showed a weakening trend until the third year after the completion of the M&A, when the short-term solvency improved and the gap between the indicator of Vanke and those of similar high-quality enterprises gradually narrowed.

Vanke's M&A of Nacity, which resulted in nearly RMB 4 billion of cash outflows, had an impact on the solvency naturally. For capital-intensive real estate developers, M&As are likely to put tremendous pressure on the developers' capital situation and expose them to the risk of capital chain breakage. This is a key point to be carefully weighed by real estate developers before M&As.

(4) Operating capacity

Table 7-6 Evaluation table of Vanke's solvency before and after the M&A

Year	2010	2009	2008	2007	2005	2004
Inventory turnover	0.40	0.33	0.41	0.44	0.51	0.54
Comparison with similar enterprises	0.25	0.24	0.28	0.33	0.36	0.49
Total assets turnover rate	0.38	0.39	0.51	0.49	0.55	0.59
Comparison with similar enterprises	0.26	0.24	0.30	0.33	0.36	0.43

In terms of Vanke's operations before and after the M&A, the inventory turnover and total asset turnover showed a downward trend in the two years after the M&A, and did not improve until the third year after the M&A. However, from the average values of the indicators of similar high-quality enterprises, the inventory turnover and total asset turnover of similar enterprises also showed a downward trend, which showed that the weakening of operational capacity was a common problem in the whole industry, not only due to Vanke's M&A. Although Vanke's operating capacity decreased after the M&A, its inventory turnover and total asset turnover were consistently higher than the average values of similar high-quality enterprises in the industry, and the decreases of inventory turnover and total asset turnover were also smaller than those of similar enterprises. In general, Vanke's operation remained at a high level in the industry after the M&A.

(2) Long-term operating performance evaluation based on non-financial indicators

First of all, obtaining sufficient land project resources at a lower cost and relying on the brand effect of Nacity provided strong resource support for Vanke to establish its foothold in the Yangtze River Delta and expand its business territory. After the first equity swap between Vanke and Nacity, Vanke successfully became the actual controller of Shanghai Nacity and Suzhou Nacity and obtained additional project resources of 2.19 million square meters in Shanghai, Suzhou and other places. In August 2006, Vanke and Nacity carried out the second cooperation. Vanke continued to increase its shareholding ratio and become the controlling shareholder of Nacity Real Estate. This cooperation directly brought 2.692 million square meters of project resources to Vanke, including 1.741 million square meters in Hangzhou. The acquisition of land resources was one of the motives for Vanke's M&A. Vanke acquired land resources through the M&A with Nacity at a price much lower than the market price. According to the calculation, Vanke basically acquired the land project resources with the then market price of RMB 2,000/m2 at the price of RMB 750-1,050/m2. For Vanke, the deal was very cost-effective, and land resources were the necessary preparation for Vanke to enter the Yangtze River Delta. The reserve of land resources and the original talent resources, brand effect, market share and other high-quality resources of Nacity became "boosters" that made Vanke the leader in the Yangtze River Delta.

Second, Vanke reported a rapid growth of revenue in the Yangtze River Delta region and an overall increase in market share. Before the M&A, most of Nacity's projects had entered the development period, with strong cash profitability and fast return of capital. The two equity swaps between Vanke and Nacity brought about a significant increase in Vanke's revenue and net profit in the Yangtze River Delta. At the same time, the swaps brought about additional projects in Wuxi, Suzhou, Hangzhou, Zhenjiang and other places, resulting in a significant increase in Vanke's market share. After the second equity swap, Vanke's market share increased by 0.31% from the level before the M&A, while the third equity swap brought about a 0.75% increase in Vanke's market share.

The calculation standard of market share has changed significantly after 2005, so the market share in 2004 could not be directly compared with the data in 2005. The specific changes in market share data before and after the first equity swap could not be obtained. However, given the significant changes in Vanke's revenue and net profit after the first equity swap (in 2005, Vanke's revenue in the Yangtze River Delta region reached RMB 3,361.22 million, up 83.65% YoY, and net profit reached RMB 48,506, up 43.70% YoY), we could still conclude that Vanke achieved the growth of its market share through the M&A with Nacity.

In general, from Vanke's strategic layout, it is not difficult to find that since the first cooperation between Vanke and Nacity in 2005, Vanke's market share had continued to expand. By using Nacity's original high-quality resources, Vanke gradually acquired projects and constructed properties in a number of major cities in the Yangtze River Delta region, expanded its market share in the Yangtze River Delta region, and became a pivotal real estate developer in the Yangtze River Delta region.

7.4 Evaluation of overall performance after Vanke's M&A of Nacity and reason analysis

7.4.1 Evaluation of overall performance after the M&A. First of all, shareholders' wealth increased significantly in the short term. The market reacted enthusiastically to the M&A between Vanke and Nacity, and shareholders' wealth improved significantly in the short term, especially around the first equity swap, when investors responded more strongly and shareholders' wealth was significantly enhanced.

Secondly, in the third year after the M&A, the operating capability tended to stabilize and the overall operating performance improved. Through the analysis of financial indicators, there was a significant growth in profitability and growth capacity in the short term, but the sustainability was not strong. In the third year after the M&A, after two years of precipitation and integration, the overall performance of Vanke improved and the operation tended to stabilize.

Finally, after the M&A, Vanke obtained sufficient land reserves, successfully entered the Zhejiang real estate market, and realized its M&As motivation. After the M&A, the significant growth in Vanke's net profit and revenue in the Yangtze River Delta region, the substantial increase in the reserve of its land resources and the continued market share expansion were in line with the strategic layout of Vanke. Therefore, from the perspective of M&A motivation and post-M&A performance, Vanke's M&A of Nacity was very successful overall.

7.4.2 Analysis of reasons for M&A performance improvement. (1) Strong match between operations of Vanke and Nacity

This paper holds that Vanke's M&A of Nacity was successful partly due to the high match between the two. From the perspective of industry factors: Vanke has been exclusively focusing on the real estate field since 2001. The cooperation with Nacity Real Estate was extremely relevant to the real estate industry, and through horizontal M&A, Vanke could improve its market coverage and strengthen its brand effect, which had an important impact on Vanke's growth and development, and also facilitated the deepening of Vanke's dominant position in the real estate industry. From the perspective of regional factors: Vanke's main operating area was very different from Nacity. Vanke's business was mainly carried out in the Pearl River Delta, while Nacity's business was concentrated in Jiangsu and Zhejiang with Hangzhou as the center. Apart from their market shares in Shanghai, the intersection of the two in other regions was almost negligible, so the integration risk after the M&A might be great.

However, the fact was not so simple. The author believes that it was precisely because of the zero intersection of the two in real estate strategic layouts that provided important conditions for Vanke's M&A of Nacity. On the one hand, Nacity's strategic layout was in line with Vanke's goal of expanding market territory; on the other hand, Nacity had enough brand effect and resource advantages in Jiangsu and Zhejiang. For Vanke, it saved a lot of cost by entering Jiangsu and Zhejiang through the M&A with Nacity. More importantly, it would enable Vanke to rise in the Yangtze River Delta in a short period of time. As for the integration, for Vanke, it could maintain the original coverage of Nacity to the greatest extent, because Nacity was a very mature brand in Jiangsu and Zhejiang. In addition, the two companies had very similar corporate culture and values, which was very beneficial to the integration of the two. In fact, the integration of Vanke with Nacity basically followed this idea. In terms of size: the size of Vanke was obviously much larger than that of Nacity. According to available public information, as of the end of 2004, Vanke's total assets amounted to RMB 15,534,422,529.76, about 2.5 times Nacity's total assets; total net assets amounted to RMB 15.5 billion, 18.3 times those of Nacity; revenue from primary business amounted to RMB 7.7 billion, about 11.5

times that of Nacity; and net profit amounted to RMB 880 million, about 8.6 times that of Nacity.

The scale of Vanke was much larger than Nacity, which provided strong support for the subsequent integration of Vanke and Nacity, and Vanke had sufficient capacity to absorb the resources of Nacity. In terms of profitability, in the three times of cooperation, most of Nacity's project assets had already been under development, with faster cash return and profitability. On the one hand, Vanke made profit at the fastest speed, and on the other hand, it reduced the capital pressure on Vanke in the M&A of Nacity. In addition, Nacity had a pivotal position in the Yangtze River Delta, ranking high. It had a market share of up to 10% in Hangzhou alone. It had strong profitability, which could bring rich return to Vanke. From many perspectives, Vanke and Nacity matched each other very much, which provided many favorable conditions for the M&A. The degree of match between two enterprises is an important investigation and analysis step in the pre-M&A phase, and the acquirer should measure it from multiple perspectives. The research process will help enterprises find out the difficult points and potential risks of future integration, and will help them avoid the risks of M&A, improve the efficiency of integration and increase the success rate of M&A.

(2) Vanke had sufficient capital before and after the M&A, and the capital risk has always been kept within the controllable range.

For real estate developers, capital is a necessary factor to support the development of the developers; without sufficient financial support, the real estate developers will not be able to move forward, and it is the sensitivity of capital and the consideration of the financing need that cause most of the merged enterprises to prefer to be paid in cash. This was also the case with Vanke's M&A with Nacity, which took three years. The total payment reached RMB 4.01651 billion, which was not a small figure. For real estate developers, realizing M&As by way of cash payments usually brings huge capital pressure to the merging enterprises, and once a certain capital link is broken, it is very likely to trigger a chain reaction of capital for the whole enterprise, which eventually leads to the collapse of the business operation.

In the year before the first equity swap, Vanke's monetary funds amounted to RMB 3,131.99952163 million. In the first equity swap, the payment amount was RMB 1,857.85 million, which would be paid to Nacity out of self-owned funds by four installments within two years. Compared with the payment amount, Vanke's financial position was relatively adequate, and the payment by installments also reduced Vanke's financial burden and facilitated the flow of funds. The monetary capital of Vanke before the second equity swap was RMB 3,249.03471039 million, reflecting Vanke's abundant capital position. The amount required for the M&A was RMB 1,765.66 million, which would be paid to Nacity by four installments within one year. Given Vanke's abundant capital position, the payment of the M&A price was well within Vanke's financial capability. The payment of RMB 393 million for the third equity swap should be made to Nacity within one year. The full price for Vanke's M&A of Nacity was paid at the end of 2007. Judging from the monetary capital of Vanke from the end of 2004 to the end of 2007, its monetary capital had been at a high level, which provided a strong support for Vanke's M&A of Nacity. For M&As of real estate developers, the developers need to fully consider the impact of future cash expenditures on the developers before M&As, choose appropriate financing methods, and evaluate the future financing situation and capital circulation of the developers to avoid the situation of inability to bear subsequent expenditures and disruption of normal operation.

(3) Integration after the M&A was relatively successful

With the east wind of the M&A of Nacity, it entered Hangzhou market smoothly. However, whether it could become the leader of Hangzhou market in the real sense would depend on the integration of Vanke and Nacity. The Vanke's path of integration with Nacity can be described as cautious. At the "Nougat Conference", each employee was asked to taste the Nougat, a symbol of Vanke-Nacity fusion. Nacity's loyal employees were awarded a "ring". From the emotional perspective, Vanke carefully calmed Nacity staff's emotions. In terms of personnel, Vanke retained the original Nacity team and treated Nacity staff and Vanke staff in the same way, regarding ability as the only measure of talent. Culturally, Vanke fully retained Nacity's original excellent corporate culture such as zealous charity and caring for vulnerable groups, and fully integrated the two high-quality cultures. In fact, there were many similarities between Vanke and Nacity, which provided the prerequisite for the integration of Vanke and Nacity. Although Vanke took every step carefully for the successful integration with Nacity, there was still an unavoidable "outflow" of staff. Personnel changes due to M&As are inevitable in all M&As, and even in more mature countries, the turnover rate after an M&A can be as high as 20%. On the whole, the integration of Vanke and Nacity after the M&A was relatively successful. After the M&A, the integration of the two enterprises is the key to the success of the M&A, the expected scale effect and the expansion of the enterprises. Respect the target's corporate culture, values and concepts, business strategy, etc., absorb the high-quality components of both parties' corporate cultures, values and concepts, pay attention to the emotional pacification of human resources, avoid discrimination, and integrate the enterprises to improve competitiveness and profitability of enterprises from the perspective of enterprise development.

CHAPTER 8

STRATEGIES TO IMPROVE THE PERFORMANCE OF HORIZONTAL M&AS OF CHINESE LISTED REAL ESTATE DEVELOPERS

The degree of M&A matching, capital risks, and M&A integration effect are the key points that affect the success of M&As and the improvement in M&A performance of real estate developers. Meanwhile, a good external environment, appropriate government guidance, relevant legal protection and support from intermediaries will all have a direct impact on M&A performance. Based on the case study, this chapter makes relevant recommendations at the micro and macro levels for real estate developers and their external environment, respectively, to improve the M&A performance of real estate developers in China.

8.1 Real estate developers

8.1.1 Selection of matching targets before M&As. M&A is not a transient act, and whether two enterprises can successfully achieve improved business performance after the M&A is closely related to the degree of integration of the two enterprises. If successful integration is a necessary condition for improvement in M&A performance, then pre-M&A matching of two enterprises and selection of appropriate target enterprises for the M&A are prerequisites for successful M&A integration. The match between the two enterprises prior to the M&A is often also overlooked by the M&A drivers. In fact, the two companies with a high degree of match are easy to reflect a high degree of fit in the integration after the M&As. Similar or complementary corporate strategies, corporate culture, values, business philosophy, etc., will reduce the difficulty in integrating the two enterprises, so that the two enterprises can reduce the time of mutual integration, have the same corporate goals, and achieve the integration of the two enterprises faster and better.

The M&A drivers should combine their own corporate M&A motives and other factors, match the two enterprises from operational capacity, current situation of resources such as human and assets, strategic objectives, cultural background, management style, etc., find the target enterprises that can meet the corporate M&A motives in terms of matching degree, and at the same time make reasonable expectations of possible problems and risks in the integration process of the two enterprises, and propose effective preparatory solutions and measures. These measures will often increase the success rate of the integration of the two enterprises, and effectively control the M&A risks, so as to achieve synergistic effects and improve the M&A performance. For real estate developers, the acquisition of land resources and the expansion of their strategic territories are often the key motivation for M&As. Therefore, in the measurement of matching degree, the M&A drivers should fully consider the matching degree of the two enterprises in terms of resources and strategies, and make a judgment on whether they are suitable for M&As to achieve the motivation of M&As. In general, similar or complementary target enterprises will be more conducive for real estate developers to achieve a reasonable allocation of resources and strategic goals through M&As.

8.1.2 Reasonable management of capital chain during M&As. For real estate developers, capital is one of the most important resources. The business production and operation have a high demand for capital. Real estate developers will not be able to move without capital support. It is the importance of capital that makes many target enterprises attempt to get financing through M&As. Therefore, in the M&As of real estate developers, capital payment becomes the main payment method. Capital payment often brings huge capital pressure to the consideration payer and exposes it to the risk of capital chain breakage, so it is especially important to have reasonable expectation of the enterprise's capital situation before and after M&As. Before the M&A, the acquirer should make reasonable calculations and estimates of its capital, the amount of capital necessary to maintain its normal production and operation, the cash expenses that may be required after the M&A, and the cash return from the enterprise's own projects and the M&A projects, anticipate the possible capital risks, prepare emergency treatment plans, choose payment plans that can reduce the enterprise's capital burden within the enterprise's affordability, and strengthen the management of the capital chain during the M&A to keep the enterprise's capital risks within a manageable range.

8.1.3 Reasonable integration of enterprises involved in M&As. From the current failure cases in the M&A market, most of the enterprises are not well integrated after the M&As, which leads to the decline of the operating performance of the enterprises after the M&As. The integration of the two enterprises after the M&As is crucial and will determine whether the acquirer can fully absorb and digest the target enterprise, realize the reasonable allocation of resources, fully cooperate and complement each other in terms of management and production, and generate synergistic effects in various aspects including operations. While M&A integration is a long and complex process. The choice of a suitable target enterprise is only the first step to achieve successful integration. The key to M&A integration is the integration of the two enterprises in various aspects such as business philosophy, cultural concepts and strategic planning. For horizontal real estate M&As with the purpose of expanding business territories and entering new markets, the acquirer may have many deficiencies and disadvantages in the new market compared to the target enterprise. Therefore, for the integration of the two enterprises, it is important to maintain the advantages of the target enterprise as much as possible, focus on the integration of human resources, business philosophy and culture of both enterprises, and try to maintain the original production and operation advantages of the target enterprise in the new market. For real estate developers' vertical M&As aimed at achieving integration of production and operation chains through M&As, emphasis should be placed on integrating the two enterprises in terms of resources to maximize the effective use of resources. In the case of a hybrid M&A aimed at diversifying business development and diversifying risks, the acquirer lacks a certain level of experience in the new field, so it should actively improve its own understanding and planning of the new field, focus on cultural integration in terms of M&As, retain the advantages of each culture and integrate with each other. No matter what the M&A purpose of real estate developers, the emphasis should be on appeasement of employees. Only when employees feel that their value is recognized will they have a sense of security, trust and loyalty to the enterprise, thus maintaining the stability of the target enterprise to the greatest possible extent.

8.2 Policies and regulations

8.2.1 Perfecting the legal system on M&As of real estate developers. At present, there are many laws and regulations on M&As, but they are often based on specific issues and do not form a complete system. With the strong rise of the M&A market in China, many problems in the M&A market have surfaced, and building a more complete legal system for M&As is particularly important. The real estate industry has characteristics and backgrounds different from general industries, and special problems are inevitable in M&As. Introducing a series of targeted and focused regulations for

M&As of real estate developers and strengthening the supervision of the M&A process of real estate developers can regulate and adjust the M&As market of real estate developers in China from several aspects and protect the legitimate rights and interests of stakeholders, and are of great significance to enhancing the M&A performance of real estate developers in China and promoting the healthy and effective development of the real estate market in China.

8.2.2 Giving play to the guiding role of the government. At present, China's real estate market still stays at a low level, and there are many problems and restrictive factors in the development of the industry. M&As of real estate developers can realize the rational allocation of resources in the overall real estate industry, automatically eliminate real estate developers with small scale and poor profitability, promote industry integration, and enhance the overall strength of China's real estate developers, so they are of great significance to the development of China's real estate industry. In order to promote the healthy development of the real estate M&A market, the government should check the real estate developers' M&As from many angles. The government should establish a differentiated examination and approval system, evaluate the real estate developers applying for M&As to determine whether they are capable of carrying out M&As, and encourage large-scale real estate developers with abundant capital and strong profitability to merge and acquire small and medium-sized real estate developers with poor operating performance and poor capital operation; monitor and control illegal acts that damage the legitimate rights and interests of relevant stakeholders during the M&As, and put an end to illegal acts such as clandestine operations; strengthen the guidance for real estate developers' M&As, hire professionals to provide solutions to problems in

M&As, etc., strengthen the M&A performance of China's real estate developers in various aspects, and promote the overall development of the real estate industry.

8.2.3 Broadening the financing channels of China's real estate developers.

M&As often lead to the outflow of corporate funds and require large amounts of capital. For capital-intensive real estate developers, their M&As have particularly stringent capital requirements. The issue of capital has even become a key issue hindering the development of the real estate M&A market. The M&A funds of China's real estate developers mostly come from bank loans. New financing tools develop late and are extremely immature. Leveraged buyouts and other M&A methods still need to be improved. Bonds and other financing methods are extremely demanding for enterprises. The M&A financing channels are relatively single. All of the foregoing restrict the M&As of China's real estate developers to a certain extent, and at the same time are not conducive to the financing for the acquirers after the M&As, leading to the breakage of the capital chain of the acquirers and M&A failures. The government and relevant departments should improve the difficulty in financing for M&As of real estate developers from the following two perspectives: on the one hand, they should strengthen innovation and development of financial instruments and derivatives, improve the operation mechanism and use environment of new M&A methods and expand M&A financing channels; on the other hand, some financial support should be given to M&As that are conducive to China's real estate market. For example, we can reduce the enterprises' financial burden in M&As by reducing some of the taxes on business operations or in the M&A process.

8.2.4 Accelerating the construction of M&A intermediaries for real estate enterprises in China. The M&A of real estate developers involves many aspects and it is a complex process. In China's real estate M&A market, from matching the target enterprises, evaluating the subject assets, designing the M&A plan, raising M&A funds, negotiating between the two parties to integrating the two enterprises after the M&A, it is often done by the enterprises involved in the M&A, which requires a lot of human and financial resources from the enterprises involved in the M&A. In fact, it is very difficult for the enterprises involved in the M&A to complete these complex tasks. With the help of professional intermediaries, who can provide technical, information, legal and even financial support to the enterprises involved in the M&A, the chance of M&A success will be increased. In Western countries where the M&A market is more mature, the development of their intermediaries is also more complete. However, the early development stage of M&A intermediaries in China, the small number of intermediaries, the low efficiency and quality of some intermediaries and their low participation in M&As all restrict the development of China's M&A market to a certain extent. It is particularly important to improve the development status of such M&A intermediaries as soon as possible. Compared with foreign countries, China's investment banks are weak and their participation in M&As is low, and they are unable to give enterprises involved in M&As sufficient support in terms of information, technology and capital. China should vigorously promote the development of investment banks, encourage the implementation of professional and efficient investment banking business, guard and provide support for all aspects of M&As of real estate developers from a professional perspective, and solve the problems that exist in the process of pre-M&A preparation, implementation and integration. To improve the development of appraisal agencies such as accounting firms and legal service agencies such as law firms and enhance the quality of their work in the M&A process, it is suggested that such intermediaries set up special departments or working groups, hire professionals, and participate in the M&A process to guarantee the quality of M&A asset appraisals and the legitimate rights and interests of both parties to the M&As. China should encourage the development of consulting firms and increase their participation in real estate developers' M&As, and provide advice on the matching of the target companies, financing channels, integration, etc. to help enterprises solve problems existing in M&As.

CHAPTER 9

CONCLUSION AND PROSPECT

9.1 Conclusions

This study is mainly conducted from both panel data analysis and case study, and the following conclusions have been obtained:

9.1.1 Research findings on the short-term performance of acquirers in the horizontal M&As of Chinese listed real estate developers. This paper uses the event study method to evaluate the short-term performance of horizontal M&As by calculating the CAR in the short-term event window (-10, 20) around the M&A announcement date. The results show that the CAR before the M&A announcement date was less than 0, but it rose rapidly from the day before the M&A announcement date and peaked on the 2nd day after the announcement date, and then fluctuated continuously. In the short run, the acquirer of a horizontal M&A reported positive performance after the M&A announcement and the market had positive expectations for the M&A, but the CAR peaked during the event window at only 2.19% on the second day after the M&A announcement. Although the acquirer in horizontal M&As obtained positive performance after the M&A announcement date, but the M&A performance obtained was relatively limited and did not show significant synergies, so M&A performance was not very ideal in the short term.

9.1.2 Research findings on the long-term performance of horizontal M&A acquirers among Chinese listed real estate developers. A combination of the financial indicators and the factor analysis methods were used to evaluate the long-term performance of horizontal M&As by calculating the comprehensive performance score in each year before and after the M&A and each average financial indicator of the acquirer, and the results show that:

The comprehensive performance of the horizontal M&A acquirer decreased continuously from the year before the M&A to the first after the M&A, and increased slowly in the second year after the M&A, but the composite score was still much lower than that in the year before the M&A. This may be due to the high cost of M&A payments, or the adverse impact of the choice of cash payments on the normal business activities of real estate developers, or the poor integration of enterprises after the M&A, which makes it difficult to bring the M&A advantages into play. Performance started to pick up in the second year after the M&A, probably because with the steady progress of the integration of the acquirer and the target enterprise, the acquirer emerged with a new look and synergies and economies of scale started to take effect, making the M&A performance to gradually develop better. Looking at the average financial indicators of the acquirer, the profitability indicators had been rising from the year before the M&A to the second year after the M&A, with the rise getting smaller, indicating that the profitability of real estate enterprises improved significantly after the M&As. In addition, solvency and operating capacity indicators declined sharply during the M&A, while development capacity and cash capacity indicators rose slightly. Solvency, operating capacity, development capacity and cash capacity indicators showed significant declines in the first and second years after the M&A. It indicated that real estate developers performed poorly in terms of solvency, operations, development and cash after M&As.

Considering both short-term and long-term performance of real estate developers in horizontal M&As: in the short-term, the horizontal M&As of real estate developers bring a positive CAR, but the CAR is small, indicating that the horizontal M&As do not significantly improve the acquirer's performance. In the long run, the comprehensive performance scores of real estate developers in horizontal M&As will decline first and then rise slowly in the years before and after the M&As. although profitability continued to rise in each year before and after the M&A, solvency, operating capacity, develop ability and cash capacity all showed varying degrees of decline.

9.1.3 Long-term and short-term performance of Vanke in the M&A of Nacity. This paper makes an in-depth case study on the M&A performance of Vanke, a leading real estate developer in China. The research findings show that:

Vanke implemented the M&A with the obvious intention of trying to fill its gap in Jiangsu and Zhejiang with the resources and brand advantages of Nacity Real Estate in Zhejiang and other places to achieve its market deployment in the Yangtze River Delta and increase its market share. Before the M&A, Nacity had fallen into a series of difficulties, both internal and external, so that Nacity Group decided to abandon the real estate business and focus on other areas. After three equity swaps, Vanke successfully acquired Nacity Real Estate, obtained important land resources, and also increased its market share significantly. The high degree of match between the two and Vanke's "carefulness" in the integration path had to a certain extent contributed to Vanke's improved performance after the M&A. Meanwhile, Vanke's abundant capital before the M&A also provided strong financial support for the M&A and kept Vanke's capital risk within an acceptable range. Around the M&A, the market reacted enthusiastically to Vanke's M&A of Nacity. Investors were optimistic about the M&A. Shareholders' wealth improved through the M&A of Nacity. The changes in operating capacity after Vanke's

M&A showed a trend of first rising, then falling, and finally stabilizing, with debt service capacity weakening significantly during the period of payment for the M&A and improving after the payment was completed. Overall, Vanke's M&A of Nacity achieved positive results.

9.2 Research prospects

With the acceleration of the process of global economic integration, the international competition is becoming more and more intense. After China's accession to the WTO, the opening of China's domestic market has broken the original pattern and formed new market equilibrium. Chinese enterprises face fierce market competition, so they must look for a new way of reform and development after the collapse of the barriers of monopoly industries.

As a result, the tide of M&As in China will become more and more intense, and the theoretical and empirical studies on M&As in China will be enhanced simultaneously, which will create a good study opportunity and platform for academics. Meanwhile, the continuous innovation in relevant theoretical and empirical studies will definitely play a good role in guiding the M&As of Chinese enterprises. In this benign market environment, micro, meso, and macro markets, are going through a difficult and long-term development process.

Based on the above considerations, this paper focuses on the M&A performance of China's listed companies. However, due to the limited energy, time and ability put in this paper, the results obtained have some defects, and the author will improve the research from the following points in the future study and practice. The follow-up outlook of this paper:

(1) In the follow-up research, in order to make the performance rating system scientific, comprehensive and objective, quantitative and non-quantitative indicators can be included in the performance evaluation system. In the future, we will consider the combination of other analytical methods and consider the internal and external factors of the M&A performance to make findings more rigorous.

(2) In the process of M&A development of listed companies in China, M&As with control transfer will be developed more in the capital market which will be gradually improved in the future. However, the related domestic research in this field is not perfect and lacks in-depth and systematic analysis, so in the future research, we will focus on the control transfer in M&As.

(3) For intermediaries, there is still less academic research on the role of inter-firms at national level or even international level. The study of macro-level issues can lay a good theoretical foundation for China's economic development and related policy formulation. However, the current research on M&A performance is more focused on micro-level research, so this area is also a good research direction.

(4) For research methods, the data envelope analysis method adopted in this paper is very effective for evaluating multi-input multiple-output units, and has been greatly developed through continuous research in the academic circles in the past two decades, and is playing a due role in the development of society. In future studies, efforts should be made to extend the theoretical aspects, such as the stochasticity of DEA, the validity of fuzzy DEA, sensitivity analysis and stability, applied research on partial order set theory, research on multi-objective planning, and research on interval data models. At the same time, with the development of computer technology, more intuitive and simple

DEA software came out one after another. Therefore, in the future research, efforts should be made to use the data envelope analysis method and make use of the advantages of DEA to explore a more objective and efficient method of empirical analysis.

(5) In terms of empirical analysis. In the future research, we can improve in many aspects. Firstly, we can extend the time span of the investigation, and improve the representativeness and objectivity of the samples. Secondly, the scope of the research samples can be expanded to include different types of M&A to more accurately make a reasonable assessment of the M&A performance of listed companies. Finally, the data can be adjusted and screened in detail to eliminate various legal and policy factors, reduce the impact on performance, enhance the authenticity and comparability of the data and draw more convincing conclusions.

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APPENDIX A

LISTED REAL ESTATE DEVELOPERS INVOLVED IN HORIZONTAL M&AS

After the above screening, this paper selects 24 Chinese A-share listed real estate companies with horizontal M&As in 2016, including 11 listed on the Shenzhen Stock Exchange and 13 listed on the Shanghai Stock Exchange. Relevant data are as follows:

Schedule 1 Form of M&A Samples

No.	Date of disclosure	Enterprises involved in M&As and their stock codes	Transaction subject	Transaction amount (RMB'0,000)
1	1/22/2016	Centralcon Investment Holding (000042.SZ)	100% equity of TIME LEGEND	11,757.87
2	3/1/2016	Zhangjiang Hi-tech (600895.SH)	100% equity and related claims of Tanxi Real Estate	29,090.62
3	3/10/2016	Xinhu Zhongbao (600208.SHN, 600208.SH)	100% equity of Gucheng Real Estate; Partial claims of Gucheng Real Estate	119,000.00
4	3/23/2016	AVIC Sunda (000043.SZ)	25% equity of Jiangxi AVIC Real Estate	4,883.20
5	3/30/2016	Huafa Industrial (600325.SH, 600325.SHN)	49.75% equity of Haichuan Real Estate	59,626.25
6	5/10/2016	Binjiang Group (002244.SZ)	75% equity of Xinhui Real Estate	28,125.00
7	5/24/2016	Kinghand Industrial Investment (000615.SZ)	51% equity of Hanji Yida Real Estate	5,100.00
8	5/24/2016	Nanshan Holding (002314.SZ)	51% equity of Chiwan Real Estate	98,205.00
9	7/6/2016	CHINA GREEN ELECTRICITY INVESTMENT of TIANJIN (000537.SZ) Lu	34.50% equity of Chongqing Luneng; 65.00% equity of Yibin Energy	911,117.11
10	7/9/2016	Guangzhou Yuetai (600393.SH, 600393.SHN)	23% equity of WHITE HORSE LIMITED	15,870.00

Schedule 1 (continued)

No.	Date of disclosure	Enterprises involved in M&As and their stock codes	Transaction subject	Transaction amount (RMB'0,000)
11	8/12/2016	Hongsheng Technology (600817.SH)	70% equity of Xuheng Real Estate	6,891.37
12	8/17/2016	China Fortune (600340.SH, 600340.SHN)	60% equity of Xianghe Peacock City	55,699.55
13	8/19/2016	CCCG Real Estate (000736.SZ)	30% equity of Suzhou Company	53,258.16
14	8/27/2016	Yango Group (000671.SZ)	100% equity of Daaicheng	510.00
15	9/13/2016	Tahoe Group (000732.SZ)	70% equity of Changtai Yonglong; 70% equity of Fujian Letong	38,500.00
16	9/14/2016	Languang Development (600466.SHN, 600466.SH)	100% equity of Tianjin Jiangyu	162,500.00
17	9/15/2016	Chixia Development (600533.SH)	30% equity of Wuxi Chixia Development	7,831.00
18	9/23/2016	Seazen Holdings (601155.SHN, 601155.SH)	100% equity of Suzhou Golden Century	101,571.39
19	11/16/2016	Jinke Property (000656.SZ)	49% equity of Nanning Sunac	49,000.00
20	12/16/2016	Pearl River Enterprises (600684.SH)	40.3226% equity of Hainan Mei Hao Li	3,000.00
21	12/19/2016	Lujiazui (600663.SH, 600663.SHN, 900932.SH)	100% equity of Shenwan Real Estate; all claims of Shenwan Real Estate	341,342.67
22	12/22/2016	Hua Yuan Property (600743.SH)	100% equity of Guangzhou Gaoya	137,900.00
23	12/24/2016	Shibei Hi-Tech (900902.SH, 600604.SH)	15% equity of Yinxiang Real Estate	9,900.00
24	12/31/2016	Oceanwide Holdings (000046.SZ)	20% equity of Oceanwide Qingdao	9,296.04

APPENDIX B
SHORT-TERM PERFORMANCE-TABLE 2 EVENT WINDOW DATA SHEET

Date	Oceanwide Holdings (000046.SZ)				Shibei Hi-Tech (600604.SH)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0021	0.0002	0.0117	0.0115	-0.0026	0.0002	0.0106	0.0103
-9	-0.0310	0.0029	-0.0147	-0.0176	-0.0042	0.0004	-0.0518	-0.0522
-8	0.0066	-0.0006	0.0032	0.0038	0.0047	-0.0004	-0.0011	-0.0006
-7	-0.0009	0.0001	-0.0032	-0.0033	0.0061	-0.0006	-0.0032	-0.0026
-6	-0.023	0.0002	-0.0074	-0.0077	-0.0007	0.0001	0.0486	0.0485
-5	0.0035	-0.0003	0.0011	0.0014	-0.0028	0.0003	-0.0171	-0.0174
-4	-0.0036	0.0003	-0.0064	-0.0068	-0.0197	0.0018	-0.0179	-0.0198
-3	-0.0043	0.0004	-0.0022	-0.0026	0.0054	-0.0005	0.0016	0.0021
-2	0.0031	-0.0003	-0.0043	-0.0040	0.0014	-0.0001	0.1000	0.1001
-1	0.0007	-0.0001	0.0065	0.0066	0.0013	-0.0001	0.0071	0.0072
1	-0.0099	0.0009	0.0086	0.0077	0.0038	-0.0004	0.0287	0.0290
2	0.0030	-0.0003	0.0032	0.0035	-0.0060	0.0006	0.0087	0.0081
3	0.0017	-0.0002	-0.0021	-0.0020	-0.0077	0.0007	-0.0385	-0.0392
4	0.0003	0.0000	-0.0107	-0.0106	0.0050	-0.0005	-0.0033	-0.0028
5	0.0012	-0.0001	0.0043	0.0044	0.0044	-0.0004	-0.0227	-0.0223
6	0.0022	-0.0002	0.0011	0.0013	-0.0074	0.0007	0.0102	0.0095
7	0.0053	-0.0005	-0.0064	-0.0059	0.0012	-0.0001	0.0541	0.0542
8	0.0032	-0.0003	0.0011	0.0014	0.0018	-0.0002	-0.0055	-0.0053
9	-0.0002	0.0000	-0.0054	-0.0054	-0.0076	0.0007	-0.0196	-0.0204
10	-0.0045	0.0004	-0.0293	-0.0297	0.0022	-0.0002	0.0266	0.0268
11	0.0014	-0.0001	0.0100	0.0102	-0.0001	0.0000	-0.0154	-0.0154
12	0.0002	0.0000	0.0055	0.0055	0.0057	-0.0005	-0.0281	-0.0276
13	-0.0070	0.0007	0.0000	-0.0007	0.0031	-0.0003	0.0009	0.0012
14	-0.0027	0.0003	0.0220	0.0217	0.0013	-0.0001	-0.0758	-0.0757
15	-0.0116	0.0011	-0.0043	-0.0054	-0.0048	0.0005	-0.0236	-0.0240
16	-0.0188	0.0018	0.0022	0.0004	0.0030	-0.0003	0.0079	0.0082
17	0.0061	-0.0006	-0.0054	-0.0048	-0.0010	0.0001	0.0010	0.0009
18	0.0007	-0.0001	0.0011	0.0011	-0.0055	0.0005	-0.0193	-0.0198
19	-0.0018	0.0002	0.0043	0.0042	-0.0015	0.0001	0.0053	0.0052
20	0.0063	-0.0006	0.0108	0.0114	-0.0074	0.0007	0.0037	0.0030

Date	Hua Yuan Property (600743.SH)				Hua Yuan Property (600743.SH)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0003	0.0003	0.0000	-0.0003	0.0008	0.0001	-0.0065	0.0064
-9	0.0029	-0.0003	0.0000	0.0003	0.0015	-0.0001	0.0000	0.0001
-8	-0.0026	0.0002	-0.0567	-0.0570	-0.0134	0.0013	0.0065	0.0053
-7	-0.0042	0.0004	0.0089	0.0085	-0.0030	0.0003	-0.0207	-0.0210
-6	0.0047	-0.0004	-0.0199	-0.0194	0.0029	-0.0003	0.0104	0.0106
-5	0.0061	-0.0006	0.0068	0.0073	-0.0026	0.0002	-0.0045	-0.0048
-4	-0.0007	0.0001	0.0067	0.0066	-0.0042	0.0004	-0.0008	-0.0012
-3	-0.0028	0.0003	-0.0044	-0.0047	0.0047	-0.0004	-0.0091	-0.0086
-2	-0.0197	0.0018	0.0022	0.0004	0.0061	-0.0006	-0.0171	-0.0165
-1	0.0054	-0.0005	0.0067	0.0072	-0.0007	0.0001	0.0093	0.0093
1	0.0014	-0.0001	0.0000	0.0001	-0.0197	0.0018	-0.0118	-0.0136
2	0.0013	-0.0001	0.0000	0.0001	-0.0197	0.0018	-0.0118	-0.0136
3	0.0038	-0.0004	0.0022	0.0026	0.0054	-0.0005	-0.0263	-0.0258
4	-0.0060	0.0006	-0.0067	-0.0073	0.0014	-0.0001	0.0000	0.0001
5	-0.0077	0.0007	-0.0022	-0.0030	0.0013	-0.0001	-0.0236	-0.0234
6	0.0050	-0.0005	0.0023	0.0027	0.0038	-0.0004	0.0152	0.0155
7	0.0044	-0.0004	0.0135	0.0139	-0.0060	0.0006	-0.0008	-0.0094
8	-0.0074	0.0007	0.0044	0.0037	-0.0077	0.0007	-0.0084	-0.0092
9	0.0012	-0.0001	0.0000	0.0001	0.0050	-0.0005	-0.0094	-0.0089
10	0.0018	-0.0002	-0.0044	-0.0042	0.0044	-0.0004	0.0036	0.0040
11	-0.0076	0.0007	0.0177	0.0170	0.0074	0.00070	0.005	0.0043
12	0.0022	-0.0002	-0.0022	-0.0020	0.0012	-0.0001	-0.0040	-0.0039
13	-0.0001	0.0000	-0.0066	-0.0066	0.0018	-0.0002	0.0112	0.0114
14	0.0057	-0.0005	-0.0022	-0.0017	-0.0076	0.0007	-0.0049	-0.0056
15	0.0031	-0.0003	-0.0088	-0.0085	0.0022	-0.0002	0.0009	0.0011
16	0.0013	-0.0001	-0.0244	-0.0243	-0.0001	0.0000	-0.0121	-0.012
17	-0.0048	0.0005	0.0046	0.0041	0.0057	-0.0005	-0.0176	-0.0171
18	0.0030	-0.0003	0.0045	0.0048	0.0031	-0.0003	0.0092	0.0095
19	-0.0010	0.0001	0.0000	-0.0001	0.0013	-0.0001	0.0201	0.0202
20	-0.0055	0.0005	0.0113	0.0108	-0.048	0.0005	-0.0058	-0.0063

Date	Pearl River Enterprises (600684.SH)				Jinke Property (000656.SZ)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0020	0.0002	-0.0384	-0.0386	-0.0030	0.0003	-0.0459	-0.0462
-9	0.0008	-0.0001	-0.0223	-0.0222	-0.0075	0.0007	-0.0060	-0.0067
-8	0.0015	-0.0001	-0.0120	-0.0119	-0.0059	0.0005	-0.0121	-0.0126
-7	-0.0134	0.0013	0.0158	0.0145	-0.0014	0.0001	-0.0082	-0.0083
-6	-0.0030	0.0003	-0.0048	-0.0051	0.0033	-0.0003	-0.0021	-0.0018
-5	0.0029	-0.0003	0.0000	0.0003	-0.0046	0.0004	0.0041	0.0037
-4	-0.0026	0.0002	-0.0455	-0.0447	0.0059	-0.0006	0.0062	0.0067
-3	-0.0042	0.0004	0.0013	0.0009	-0.0032	0.0003	-0.0041	-0.0044
-2	0.0047	-0.0004	-0.0063	-0.0058	-0.0020	0.0002	0.0194	0.0162
-1	0.0061	-0.0006	0.0025	0.0031	0.0029	-0.0003	0.0262	0.0265
1	-0.0007	0.0001	-0.0087	-0.0088	-0.0072	0.0007	0.0020	0.0013
2	-0.0028	0.0003	-0.0138	-0.0141	0.0128	-0.0012	-0.0020	-8.0008
3	-0.0197	0.0018	0.0140	0.0122	0.0006	-0.0001	0.0039	0.0040
4	0.0054	-0.0005	0.0176	0.0181	-0.0001	0.0000	0.0098	0.0098
5	0.0014	-0.0001	-0.0173	-0.0172	-0.0010	0.0001	-0.0019	-0.0020
6	0.0013	-0.0001	-0.0013	-0.0011	-0.0002	0.0000	0.0078	0.0078
7	0.038	-0.0004	0.0025	0.0029	-0.0085	0.0008	0.0058	0.0050
8	-0.0060	0.0006	-0.0088	-0.0094	-0.0011	0.0001	-0.0154	-0.0155
9	-0.0077	0.0007	0.0000	-0.0007	-0.0021	0.0002	-0.0488	-0.0490
10	0.0050	-0.0005	-0.0038	-0.0033	-0.0008	0.0001	0.1006	0.1005
11	0.0044	-0.0004	0.0104	0.0144	0.0009	-0.0001	0.0560	0.0561
12	-0.0074	0.0007	0.0088	0.0081	0.0006	-0.0001	-0.0548	-0.0547
13	0.0012	-0.0001	0.0025	0.0026	0.0013	-0.0001	-0.0486	-0.0485
14	0.0018	-0.0002	0.0099	0.0101	0.0005	0.0000	0.0138	0.0138
15	-0.0076	0.0007	0.0147	0.0140	0.0034	-0.0003	0.0155	0.0158
16	-0.0001	0.0000	-0.0098	-0.0098	0.0056	-0.0005	0.0156	0.0161
17	-0.0001	0.0000	-0.0098	-0.0098	0.0056	-0.0005	0.0154	0.0148
18	0.0057	-0.0005	-0.0012	-0.0007	-0.0064	0.0006	0.0154	0.0148
19	0.0031	-0.0003	-0.0112	0.0109	-0.0074	0.0007	-0.0038	-0.0045
20	0.0013	-0.0001	-0.0489	-0.0488	0.0032	-0.0003	-0.0095	-0.0092

Date	Seazen Holdings (601155.SH)				Chixia Development (600533.SH)			
Event wind ow	Market return	Expecte d return	Stock return	AR	Market return	Expecte d return	Stock return	AR
-10	-0.0012	0.0001	-0.0050	-0.0051	0.0025	-0.0002	-0.0423	-0.0420
-9	-0.0023	0.0002	0.0025	0.0023	-0.0004	0.0000	0.0038	0.0038
-8	0.0023	-0.0002	-0.0133	-0.0130	-0.0045	0.0004	0.0076	0.0072
-7	0.0018	-0.0002	-0.0059	-0.0057	-0.0013	0.0001	0.0076	0.0075
-6	-0.0001	0.0000	-0.0051	-0.0051	-0.0012	0.0001	-0.0057	-0.0058
-5	0.0020	-0.0002	-0.0178	-0.0177	-0.0023	0.0002	0.0057	0.0055
-4	-0.0045	0.0004	0.0363	0.0359	0.0023	-0.0002	-0.0113	-0.0111
-3	-0.0001	0.0000	-0.0017	-0.0017	0.0018	-0.0002	-0.0267	-0.0265
-2	0.0006	-0.0001	0.0125	0.0126	-0.0001	0.0000	0.0098	0.0098
-1	0.0064	-0.0006	0.0553	0.0559	0.0020	-0.0020	0.0058	0.0060
1	0.0010	-0.0001	-0.0152	-0.0151	-0.0045	0.0004	0.0058	0.0054
2	0.0027	-0.0003	0.0276	0.0278	-0.0001	0.0000	0.0038	0.0039
3	-0.0021	0.0002	0.0071	0.0069	0.0006	-0.0001	-0.0056	-0.0055
4	-0.0143	0.0013	-0.0188	0.0091	0.0010	-0.0001	-0.0056	-0.0055
5	0.0035	-0.0003	0.0088	0.0091	0.0010	-0.0001	-0.0056	-0.0055
6	0.0003	0.0000	-0.0768	-0.0768	0.0027	-0.0003	-0.0263	-0.0260
7	0.0025	-0.0002	0.0094	0.0097	-0.0021	0.0002	0.1002	0.0100
8	-0.0011	0.0001	-0.0093	-0.0095	-0.0143	0.013	-0.0315	-0.0329
9	0.0011	-0.0001	-0.0060	-0.0059	0.0035	-0.0003	-0.0018	-0.0015
10	0.0045	-0.0004	0.0026	0.0030	0.0003	0.0000	-0.0145	-0.0145
11	-0.0045	0.0004	-0.0026	-0.0030	0.0025	-0.0002	-0.0294	-0.0292
12	-0.0149	0.0014	0.0095	0.0081	-0.0011	0.0001	0.0133	0.0132
13	0.0037	-0.0003	0.0026	0.0029	0.0011	-0.0001	-0.0019	-0.0018
14	0.0037	-0.0003	0.0026	0.0029	0.0045	-0.0004	0.0225	0.0229
15	0.0077	-0.0007	-0.0119	-0.0112	-0.0045	0.0004	-0.0073	-0.0077
16	0.0022	-0.0002	-0.0052	-0.0050	-0.0149	0.0014	-0.0129	-0.0143
17	0.0078	-0.0007	-0.0035	-0.0027	0.0037	-0.0003	0.0280	0.0284
18	0.0026	-0.0002	0.0009	0.0011	0.0037	-0.0003	-0.0055	-0.0051
19	-0.0016	0.0001	-0.0043	-0.0045	0.0077	-0.0007	-0.0091	-0.0084
20	0.0043	-0.0004	-0.0218	-0.0214	0.0022	-0.0002	0.0000	0.0002

Date	Languang Development (600466.SH)				Tahoe Group (000732.SZ)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0025	-0.0002	0.0024	0.0026	0.0009	-0.0001	-0.0125	-0.0124
-9	-0.0004	0.0000	-0.0108	-0.0108	-0.0041	0.0004	0.0102	0.0098
-8	-0.0045	0.0004	-0.0012	-0.0016	0.0018	-0.0002	-0.0202	-0.0200
-7	-0.0013	0.0001	-0.0085	-0.0086	0.0012	-0.0001	-0.0029	-0.0028
-6	-0.0012	0.0001	0.0024	0.0023	0.0000	0.0000	-0.0143	-0.0143
-5	-0.0023	0.0002	-0.0037	-0.0039	0.0008	-0.0001	0.0145	0.0146
-4	0.0023	-0.0002	-0.0061	-0.0059	-0.0007	0.0001	0.0030	0.0029
-3	0.0018	-0.0002	-0.0123	-0.0122	0.0010	-0.0004	-0.0025	-0.0021
-2	0.0020	-0.0002	0.0051	0.0053	0.0090	-0.0008	-0.0337	-0.0329
-1	0.0020	-0.0002	0.0051	0.0053	0.0090	-0.0008	-0.0337	-0.0329
1	-0.0045	0.0004	0.0000	-0.0004	0.0070	-0.0007	0.0005	0.0012
2	-0.0001	0.0000	-0.0013	-0.0013	-0.0026	0.0002	0.0041	0.0039
3	0.0006	0.0001	-0.0013	-0.0012	-0.0020	0.0002	0.0041	0.0039
4	0.0064	-0.0006	0.0192	0.0198	-0.0158	0.0015	0.0352	0.0337
5	0.0010	-0.0001	-0.0289	-0.0288	0.0023	-0.0002	0.0049	0.0051
6	0.0027	-0.0003	0.0116	0.0119	0.0027	-0.0002	-0.0324	-0.0321
7	-0.0021	0.0002	0.0268	0.0266	0.0059	-0.0006	-0.0187	-0.0182
8	-0.0143	0.0013	-0.0050	-0.0063	-0.0014	0.0001	0.0139	0.0138
9	0.0035	-0.0003	-0.0138	-0.0134	0.0047	-0.0004	-0.0071	-0.0067
10	0.0003	0.0000	-0.0025	-0.0025	0.0051	-0.0005	-0.0103	-0.0098
11	0.0025	-0.0002	-0.0038	-0.0036	-0.0037	0.0003	-0.0404	-0.0408
12	-0.0011	0.0001	0.0064	0.0063	-0.0097	0.0009	-0.0108	-0.0117
13	0.0011	-0.0001	-0.0025	-0.0024	0.0009	-0.0001	0.0066	0.0066
14	0.0045	-0.0004	-0.0038	-0.0034	0.0030	-0.0030	0.0184	0.0187
15	-0.0045	0.0004	0.0038	0.0034	0.0025	-0.0002	-0.0160	-0.0157
16	-0.149	0.0014	-0.0076	-0.0090	0.0001	0.0000	-0.0130	-0.0130
17	0.0037	-0.0003	0.0102	0.0106	0.0053	-0.0005	-0.0055	-0.0050
18	0.0037	-0.0003	-0.0076	-0.0073	-0.0031	0.0003	0.0061	0.0058
19	0.0077	-0.0007	0.0000	0.0007	-0.0024	0.0002	-0.0033	-0.0035
20	0.0022	-0.0002	-0.0115	-0.0113	0.0018	-0.0002	0.0038	0.0040

Date	Yango Group (000671.SZ)				CCCG Real Estate (000736.SZ)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	0.0015	-0.0001	-0.0181	-0.0179	0.0031	-0.0003	-0.0260	-0.0257
-9	-0.0006	0.0001	0.0318	0.0318	-0.0084	0.0008	0.0000	-0.0008
-8	0.0059	-0.0006	0.0373	0.0379	0.0070	-0.0007	-0.0085	-0.0078
-7	0.0050	-0.0005	-0.0141	-0.0136	0.0028	-0.0003	0.0275	0.0278
-6	-0.0003	0.0000	-0.0127	-0.0127	0.0015	-0.0001	-0.0184	-0.0183
-5	-0.0056	0.0005	0.0273	0.0268	-0.0006	0.0001	0.0254	0.0254
-4	0.0033	-0.0003	-0.0141	-0.0138	0.0059	-0.0006	0.0219	0.0224
-3	0.0088	-0.0088	0.0111	0.0119	0.0050	-0.0005	-0.0254	-.0250
-2	0.0010	-0.0001	-0.0031	-0.0030	-0.0003	0.0000	0.1002	0.1002
-1	0.0023	-0.0002	0.0142	0.0144	-0.0056	0.0005	0.1003	0.0997
1	-0.0016	0.0001	-0.0109	-0.0110	0.0033	-0.0003	0.0468	0.0471
2	-0.0037	0.0003	0.0110	0.0106	0.0088	-0.0008	-0.0894	-0.0885
3	-0.0056	0.0005	-0.0217	-0.0223	0.0010	-0.0001	-0.0117	-0.0116
4	0.0024	-0.0002	-0.0032	-0.0029	0.0023	-0.0002	-0.0534	-0.0532
5	0.0009	-0.0001	-0.0127	-0.0127	-0.0016	0.0001	-0.0250	-0.0251
6	-0.0041	0.0004	0.0016	0.0012	-0.0037	0.0003	0.0113	0.0109
7	0.0018	-0.0002	-0.0097	-0.0095	-0.0056	0.0005	-0.0127	-0.0132
8	0.0012	-0.0001	-0.0228	-0.0227	0.0024	-0.0002	0.0323	0.0326
9	0.0000	0.0000	0.0033	0.0033	0.0009	-0.0001	-0.0706	-0.0705
10	0.0008	-0.0001	0.0000	0.0001	-0.0041	0.0004	0.0011	0.0007
11	-0.0007	0.0001	0.0315	0.0314	0.0018	-0.0002	0.0011	0.0012
12	0.0040	-0.0004	0.0129	0.0132	0.0012	-0.0001	-0.0043	-0.0042
13	0.0079	-0.0007	0.0063	0.0071	0.0000	0.0000	0.0048	0.0048
14	0.0090	-0.0008	0.0032	0.0040	0.0008	-0.0001	0.0059	0.0059
15	0.0070	-0.0007	-0.0079	-0.0072	-0.0007	0.0001	-0.0551	-0.0552
16	-0.0026	0.0022	-0.0158	-0.0161	0.0040	-0.0004	-0.0376	-0.0372
17	-0.0020	0.0002	0.0322	0.0320	0.0079	-0.0007	0.0047	0.0054
18	-0.0158	0.0015	-0.0109	-0.0124	0.0090	-0.0008	-0.0023	-0.0015
19	0.0023	-0.0002	-0.0016	-0.0014	0.0070	-0.0007	0.0064	0.0071
20	0.0027	-0.0002	-0.0032	-0.0029	-0.0026	0.0002	0.0185	0.0183

Date	China Fortune (600340.SH)				Hongsheng Technology (600817.SH)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0181	0.0017	0.0177	0.0160	-0.0055	0.0005	0.0500	0.0495
-9	0.0001	0.0000	0.0089	0.0089	-0.0009	0.0001	0.0500	0.0500
-8	-0.0094	0.0009	-0.0046	-0.0055	0.0058	-0.0005	0.0500	0.0505
-7	-0.0101	0.0009	0.0058	0.0048	-0.0181	0.0017	0.0498	0.0481
-6	0.0039	-0.0004	-0.0080	-0.0076	-0.0001	0.0000	0.0502	0.0502
-5	0.0057	-0.0005	-0.0150	-0.0145	-0.0094	0.0009	0.0272	0.0263
-4	0.0034	-0.0003	-0.0012	-0.0009	-0.0101	0.0009	-0.0498	-0.0507
-3	0.0006	-0.0001	0.0465	0.0466	0.0039	-0.0004	0.0116	0.0119
-2	0.0052	-0.0005	0.355	0.0630	0.0057	-0.0005	0.0424	0.0429
-1	0.0038	-0.0004	-0.0379	-0.0375	0.0034	-0.0003	-0.0077	-0.0074
1	-0.0017	0.0002	0.0079	0.0078	0.0006	-0.0001	0.0501	0.0501
2	-0.0067	0.0006	-0.0109	-0.0115	0.0053	-0.0005	0.0502	.0506
3	0.0070	-0.0007	0.0008	0.0014	0.0038	-0.0004	0.0259	0.0263
4	0.025	-0.0019	-0.0057	-0.0038	-0.0017	0.0002	0.0500	0.0498
5	0.0034	-0.0003	-0.0088	-0.0084	-0.0067	0.0006	-0.0498	-0.0504
6	-0.0001	0.0000	-0.014	-0.0104	0.0070	-0.0007	-0.0173	-0.0166
7	0.0025	-0.0002	0.0070	0.0072	0.0205	-0.0019	0.0205	0.0204
8	-0.0004	0.0000	0.0185	0.0185	0.0034	-0.0003	0.0103	0.0107
9	-0.0045	0.0004	0.0000	-0.0004	-0.0001	0.0000	0.0193	0.193
10	-0.0013	0.0001	0.0083	0.0082	0.0025	-0.0002	0.0017	0.0019
11	-0.0012	0.0001	-0.0105	-0.0151	-0.0004	0.0000	0.0173	0.0172
12	-0.0023	0.0002	0.0065	0.0063	-0.0045	0.0004	-0.0049	-0.0053
13	0.0023	-0.0002	0.0019	0.0021	-0.0013	0.0001	-0.0165	-0.0165
14	0.0018	-0.0002	0.0144	0.0145	-0.0012	0.0001	-0.0056	-0.0057
15	-0.0001	0.0000	0.0019	0.0019	-0.0023	0.0002	0.0135	0.0133
16	0.0020	-0.0002	0.0100	0.0102	0.0023	-0.0002	0.0133	0.0135
17	-0.0045	0.0004	-0.0177	-0.0181	0.0018	-0.0002	0.0159	0.0160
18	-0.0001	0.0000	-0.0007	-0.0008	-0.0001	0.0000	-0.0011	-0.0011
19	0.0006	-0.0001	-0.0045	-0.0044	0.0020	-0.0002	0.0178	0.0180
20	0.0064	-0.0006	-0.0019	-0.0013	-0.0045	0.0004	0.0286	0.0282

Date	Guangzhou Yuetai (600393.SH)				CHINA GREEN ELECTRICITY INVESTMENT of TIANJIN (000537.SZ)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0038	0.0004	0.0177	0.0160	-0.0055	0.0005	0.0500	0.0495
-9	-0.0015	0.0001	0.0089	0.0089	-0.0009	0.0001	0.0500	0.0500
-8	0.0069	-0.0006	-0.0046	-0.0055	0.0058	-0.0005	0.0500	0.0505
-7	-0.0002	0.0000	0.0058	0.0048	-0.0181	0.0017	0.0198	0.0481
-6	-0.0074	0.0007	-0.0080	-0.0076	-0.0001	0.0000	0.0502	0.0502
-5	0.0108	-0.0010	-0.0105	-0.0145	-0.0094	0.0009	0.0272	0.0263
-4	0.0057	-0.0005	-0.0012	-0.0009	-0.011	0.0009	-0.0498	-0.050
-3	0.0035	-0.0003	.0465	0.0166	0.0039	-0.0004	0.0116	0.0119
-2	-0.0003	0.0000	0.0355	0.0360	0.0057	-0.0005	0.0424	0.0429
-1	0.0009	-0.0001	-0.0379	-0.0375	0.0034	-0.0003	-0.0077	-0.0074
1	0.0135	-0.0013	0.0079	0.0078	0.0006	-0.0001	0.0501	0.0501
2	0.0015	-0.0001	-0.0109	-0.0115	0.0052	-0.0005	0.0502	0.0506
3	0.0023	-0.0002	0.0008	0.0014	0.0038	-0.0004	0.0259	0.0263
4	0.0044	0.0004	-0.0057	-0.0038	-0.0017	0.0002	0.0500	0.0498
5	-0.0045	0.0004	-0.0088	-0.0084	-0.0067	0.0006	-.498	-0.0504
6	-0.0001	0.0000	-0.0104	-0.0104	0.0070	-0.0007	-0.0173	-0.0166
7	0.0070	-0.0007	0.007	0.0072	0.0205	-0.0019	0.0205	0.0224
8	0.0033	0.0003	0.0185	0.0185	0.0034	-0.0003	0.0103	0.0107
9	-0.0039	0.0004	0.0000	-0.0004	-0.0001	0.0000	0.0193	0.0193
10	0.0026	-0.0002	0.0083	0.0082	0.0025	-0.0002	0.0017	0.0019
11	-0.0048	0.0004	-0.0105	-0.0151	-0.0004	0.0000	0.0173	0.0172
12	-0.0002	0.0000	0.0065	0.0063	-0.0045	0.0004	-0.0049	-0.0053
13	0.0002	0.0000	0.0019	0.0021	-0.0013	0.0001	-0.0165	-0.0166
14	0.0047	-0.0004	0.0144	0.0145	-0.0012	0.0001	-0.0056	-0.0057
15	-0.0055	0.0005	0.0019	0.0019	-0.0023	0.0002	0.0135	0.0133
16	-0.0009	0.0001	0.0100	0.0102	0.0023	-0.0002	0.0133	0.0135
17	0.0058	-0.0005	-0.0177	-0.0181	0.0018	-0.0002	0.0159	0.0160
18	-0.0181	0.0017	-0.0007	-0.0008	-0.0001	0.0000	-0.0011	-0.0011
19	-0.0001	0.0000	-0.0045	-0.0044	0.0020	-0.0002	0.0178	0.0180
20	-0.0094	0.0009	-0.0019	-0.0013	-0.0045	0.0004	0.0286	0.0282

Date	Nanshan Holding (002314.SZ)				Kinghand Industrial Investment (000615.SZ)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0039	0.0004	0.0177	0.0160	-0.0055	0.0005	0.0500	0.0495
-9	0.0098	-0.0009	0.0089	0.0089	-0.0009	0.0001	0.0500	0.0500
-8	0.0033	-0.0003	-0.0046	-0.0055	0.0058	-0.0005	0.0500	0.0505
-7	-0.0043	0.0004	0.0058	0.0048	-0.0181	0.0017	0.0498	0.0481
-6	-0.0061	0.0006	-0.0080	-0.0076	-0.0001	0.0000	0.0502	0.0502
-5	-0.0230	0.0022	-0.0150	-0.0145	-0.0094	0.0009	0.0272	0.0263
-4	-0.0281	0.0026	-0.0012	-0.0009	-0.0101	0.009	-0.0498	-0.0507
-3	0.0004	0.0000	0.0465	0.0466	0.0039	-0.0004	0.0116	0.0119
-2	-0.0030	0.0003	0.0355	0.0360	0.0057	-0.0005	0.0424	0.0429
-1	-0.0064	0.0006	-0.0379	-0.0375	0.0034	-0.0003	-0.0077	-0.0074
1	-0.0025	0.0002	.0079	0.0078	0.0006	-0.0001	0.0501	0.0501
2	0.0022	-0.0002	-0.0109	-0.0115	0.0052	-0.0005	0.0502	0.0506
3	-0.0074	0.0007	0.0008	0.0014	0.0038	-0.0004	0.0259	0.0263
4	-0.0236	0.0022	-0.0057	-0.0038	-0.0017	0.0002	0.0500	0.0498
5	0.0037	-0.0003	-0.0088	-0.0084	-0.0067	0.0006	-0.0498	-0.0504
6	-0.0024	0.0002	-0.0104	-0.0104	0.0070	-0.0007	-0.0173	-0.0166
7	0.0109	-0.0010	0.0070	0.0072	0.0205	-0.0019	0.0205	0.0224
8	0.0008	-0.0001	0.0185	0.0185	0.0034	-0.0003	0.013	0.0107
9	0.0030	-0.0003	0.0000	-0.0004	-0.0001	0.0000	0.0193	0.0193
10	-0.0010	0.0001	0.0083	0.0082	0.0025	-0.0002	0.0017	0.0019
11	0.0079	-0.0007	-0.0105	-0.0151	-0.0004	0.0000	0.0173	0.0172
12	-0.0008	0.0001	0.0065	0.0063	-0.0045	0.0004	-0.0049	-0.0053
13	0.0242	-0.0023	0.0019	0.0021	-0.0013	0.0001	-0.0165	-0.0166
14	0.0017	-0.0002	0.0144	0.0145	-0.0012	0.0001	-0.0056	-0.0057
15	0.0053	-0.0005	0.0019	0.0019	-0.0023	0.0002	0.0133	0.0135
16	0.0093	-0.0009	0.0100	0.0102	0.0023	-0.0002	0.0133	0.0135
17	0.0000	0.0000	-0.0177	-0.0181	0.0018	-0.0002	0.0159	0.0160
18	0.0002	0.0000	-0.0007	-0.0008	-0.0001	0.0000	-0.0011	-0.0011
19	0.0000	0.0000	-0.0045	-0.0044	0.0020	-0.0002	0.0178	0.0180
20	-0.0171	0.0016	-0.0019	-0.0013	-0.0045	0.0004	0.0286	0.0282

Date	Binjiang Group (002244.SZ)				Huafa Industrial (600325.SH)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0112	0.0010	0.0177	0.0160	-0.0055	0.0005	0.0500	0.0495
-9	-0.0029	0.0003	0.0089	0.0089	-0.0009	0.0001	0.0500	0.0500
-8	-0.0153	0.0014	-0.0046	-0.0055	0.0058	-0.0005	0.0500	0.0505
-7	0.0008	-0.0001	0.0058	0.0048	-0.0181	0.0017	0.0498	0.0481
-6	0.0080	-0.0007	-0.0080	-0.0076	-0.0001	0.0000	0.0502	0.0502
-5	-0.0063	0.0006	-0.0150	-0.0145	-0.0094	0.0009	0.0272	0.0263
-4	0.0027	-0.0003	-0.0012	-0.0009	-0.0101	0.0009	-0.0498	-0.0507
-3	-0.0012	0.0001	0.0465	0.0466	0.0039	-0.0004	0.0116	0.0119
-2	-0.0039	0.0004	0.0355	0.0360	0.0057	-0.0005	0.0424	0.0429
-1	0.0098	-0.0009	-0.0379	-0.0375	0.0034	-0.0003	-0.0077	-0.0074
1	0.0033	-0.0003	0.0079	0.0078	0.0006	-0.0001	0.0501	0.0501
2	-0.0043	0.0004	-0.0109	-0.0115	0.0052	-0.0005	0.0502	.0506
3	-0.0061	0.0006	0.0008	0.0014	0.0038	-0.0004	0.0259	0.0263
4	-0.0230	0.0022	-0.0057	-0.0038	-0.0017	0.0002	0.0500	0.0498
5	-0.0281	0.0026	-0.0088	-0.0084	-0.0067	0.0006	-.0498	-0.0504
6	0.0004	0.0000	-0.0104	-0.0104	0.0070	-0.0007	-0.0173	-0.0166
7	-0.0030	0.0003	0.0070	0.0072	0.0205	-0.0019	.0205	0.0224
8	-0.0064	0.0006	0.0185	0.0185	0.0034	-0.0003	0.013	0.0107
9	-0.0025	0.0002	0.0000	-0.0004	-0.0001	0.0000	0.0193	0.0193
10	0.0022	-0.0002	0.0083	0.0082	0.0025	-0.0002	0.0017	0.0019
11	-0.0074	0.0007	-0.0150	-0.0151	-0.0004	0.0000	0.0173	0.0172
12	-0.0236	0.0022	0.0065	0.0063	-0.0045	0.0004	-0.0049	-0.0053
13	0.0037	-0.0003	0.0019	0.0021	-0.0013	0.0001	-0.0165	-0.0166
14	-0.0024	0.0002	0.0144	0.0145	-0.0012	0.0001	-0.0056	-0.0057
15	0.0109	-0.0010	0.0019	0.0019	-0.0023	0.0002	0.0135	0.0133
16	0.0008	-0.0001	0.0100	0.0102	0.0023	-0.0002	0.0133	0.0135
17	0.0030	-0.0003	-0.0177	-0.0181	0.0018	-0.0002	0.0159	0.0160
18	-0.0010	0.0001	-0.0007	-0.0008	-0.0001	0.0000	-0.0011	-0.0011
19	0.0079	-0.0007	-0.0045	-0.0044	0.0020	-0.0002	0.0178	0.0180
20	-0.0008	0.0001	-0.0019	-0.0013	-0.0045	0.0004	0.0286	0.0282

Date	AVIC Sunda (000043.SZ)				Xinhu Zhongbao (600208.SH)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	0.0134	-0.0013	0.0177	0.0160	-0.0055	0.0005	0.0500	0.0495
-9	0.0256	-0.0024	0.0089	0.0089	-0.0009	0.0001	0.0500	0.0500
-8	-0.0057	0.0005	-0.0046	-0.0055	0.0058	-0.0005	0.0500	0.0505
-7	-0.0121	0.0011	0.0058	0.0048	-0.0181	0.0017	0.0498	0.0481
-6	0.0043	-0.0004	-0.0080	-0.0076	-0.0001	0.0000	0.0502	0.0502
-5	-0.0054	0.0005	-0.0150	-0.0145	-0.0094	0.0009	0.0272	0.0263
-4	-0.0151	0.0014	-0.0012	-0.0009	-0.0101	0.0009	-0.0498	-0.0507
-3	-0.0074	0.0007	0.0465	0.0466	0.0039	-0.0004	0.0116	0.0119
-2	-0.0062	0.0006	0.0355	0.0360	0.0057	-0.0005	0.0424	0.0429
-1	0.0148	-0.0014	-0.0379	-0.0375	0.0034	-0.0003	-0.0077	-0.0074
1	-0.0029	0.0003	0.0079	0.0078	0.0006	-0.0001	0.0501	0.0501
2	-0.0059	0.0006	-0.0109	-0.0115	0.0052	-0.0005	0.0502	0.0506
3	0.0119	-0.0011	0.0008	0.0014	0.0038	-0.0004	0.0259	0.0263
4	0.0155	-0.0015	-0.0057	-0.0038	-0.0017	0.0002	0.0500	0.0498
5	0.0114	-0.0011	-0.0088	-0.0084	-0.0067	0.0006	-0.0498	-0.0504
6	-0.0021	0.0002	-0.0104	-0.0104	0.0070	-0.0007	-0.0173	-0.0166
7	0.0017	-0.0002	0.0070	0.0072	0.0205	-0.0019	0.0205	0.0224
8	-0.0049	0.0005	0.0185	0.0185	0.0034	-0.0003	0.0103	0.0107
9	0.0035	-0.0003	0.0000	-0.0004	-0.0001	0.0000	0.0193	0.0193
10	0.0035	-0.0003	0.0083	0.0082	0.0025	-0.0002	0.0017	0.0019
11	-0.0055	0.0005	-0.0105	-0.0151	-0.0004	0.0000	0.0173	0.0172
12	0.0113	-0.0011	0.0065	0.0063	-0.0045	0.0004	-0.0049	-0.0053
13	0.0018	-0.0002	0.0019	0.0021	-0.0013	0.0001	-0.0165	-0.0166
14	-0.0057	0.0005	0.0144	0.0145	-0.0012	0.0001	-0.0056	-0.0057
15	0.0082	-0.0008	0.0049	0.0019	-0.0023	0.0002	0.0135	0.0133
16	-0.0042	0.0004	0.0100	-0.0102	0.0023	-0.0002	0.0133	0.0135
17	0.0010	-0.0001	-0.0177	-0.0181	0.0018	-0.0002	0.0159	0.0160
18	-0.0079	0.0007	-0.0007	-0.0008	-0.0001	0.0000	-0.0011	-0.0011
19	0.0048	-0.0004	-0.0045	-0.0044	0.0020	-0.0002	0.0178	0.0180
20	-0.0033	0.0003	-0.0019	-0.0013	-0.0045	0.0004	0.0286	0.0282

Date	Zhangjiang Hi-tech (600895.SH)				Centralcon Investment Holding (000042.SZ)			
Event window	Market return	Expected return	Stock return	AR	Market return	Expected return	Stock return	AR
-10	-0.0038	0.0004	0.0177	0.0160	-0.0055	0.0005	0.0500	0.0495
-9	-0.0015	0.0001	0.0089	0.0089	-0.0009	0.0001	0.0500	0.0500
-8	0.0069	-0.0006	-0.0046	-0.0055	0.0058	-0.0005	0.0500	0.0505
-7	-0.0002	0.0000	0.0058	0.0048	-0.0181	0.0017	0.0198	0.0481
-6	-0.0074	0.0007	-0.0080	-0.0076	-0.0001	0.0000	0.0502	0.0502
-5	0.0108	-0.0010	-0.0105	-0.0145	-0.0094	0.0009	0.0272	0.0263
-4	0.0057	-0.0005	-0.0012	-0.0009	-0.011	0.0009	-0.0498	-0.050
-3	0.0035	-0.0003	.0465	0.0166	0.0039	-0.0004	0.0116	0.0119
-2	-0.0003	0.0000	0.0355	0.0360	0.0057	-0.0005	0.0424	0.0429
-1	0.0009	-0.0001	-0.0379	-0.0375	0.0034	-0.0003	-0.0077	-0.0074
1	0.0135	-0.0013	0.0079	0.0078	0.0006	-0.0001	0.0501	0.0501
2	0.0015	-0.0001	-0.0109	-0.0115	0.0052	-0.0005	0.0502	0.0506
3	0.0023	-0.0002	0.0008	0.0014	0.0038	-0.0004	0.0259	0.0263
4	0.0044	0.0004	-0.0057	-0.0038	-0.0017	0.0002	0.0500	0.0498
5	-0.0045	0.0004	-0.0088	-0.0084	-0.0067	0.0006	-.498	-0.0504
6	-0.0001	0.0000	-0.0104	-0.0104	0.0070	-0.0007	-0.0173	-0.0166
7	0.0070	-0.0007	0.007	0.0072	0.0205	-0.0019	0.0205	0.0224
8	0.0033	0.0003	0.0185	0.0185	0.0034	-0.0003	0.0103	0.0107
9	-0.0039	0.0004	0.0000	-0.0004	-0.0001	0.0000	0.0193	0.0193
10	0.0026	-0.0002	0.0083	0.0082	0.0025	-0.0002	0.0017	0.0019
11	-0.0048	0.0004	-0.0105	-0.0151	-0.0004	0.0000	0.0173	0.0172
12	-0.0002	0.0000	0.0065	0.0063	-0.0045	0.0004	-0.0049	-0.0053
13	0.0002	0.0000	0.0019	0.0021	-0.0013	0.0001	-0.0165	-0.0166
14	0.0047	-0.0004	0.0144	0.0145	-0.0012	0.0001	-0.0056	-0.0057
15	-0.0055	0.0005	0.0019	0.0019	-0.0023	0.0002	0.0135	0.0133
16	-0.0009	0.0001	0.0100	0.0102	0.0023	-0.0002	0.0133	0.0135
17	0.0058	-0.0005	-0.0177	-0.0181	0.0018	-0.0002	0.0159	0.0160
18	-0.0181	0.0017	-0.0007	-0.0008	-0.0001	0.0000	-0.0011	-0.0011
19	-0.0001	0.0000	-0.0045	-0.0044	0.0020	-0.0002	0.0178	0.0180
20	-0.0094	0.0009	-0.0019	-0.0013	-0.0045	0.0004	0.0286	0.0282

APPENDIX C

LONG-TERM PERFORMANCE LISTED REAL ESTATE DEVELOPERS

The company	Year	Current ratio	Asset-liability ratio	Interest coverage ratio	Net operatin g margin	Return on equity	Profit to cost ratio
Oceanwide Qingdao (000046.SZ)	2015	2.0711	0.8719	4.0499	0.2815	0.1754	0.4075
	2016	2.3256	0.8517	2.9606	0.1642	0.1228	0.2485
	2017	1.5119	0.8536	2.7693	0.3688	0.1125	0.3432
	2018	1.3519	0.8660	1.5804	0.2063	0.0363	0.1506
ShibeiHi-Tech (600604.SH)	2015	2.0700	0.5931	3.4482	0.1188	0.0329	0.2354
	2016	1.9533	0.5451	3.2159	0.1312	0.0265	0.2556
	2017	1.8427	0.5177	5.0812	0.1390	0.0497	0.2969
	2018	4.2740	0.5510	4.2134	0.5300	0.0367	0.8174
HuaYuan Property (600743SH)	2015	2.0251	0.7816	29.7875	0.1098	0.1737	0.1859
	2016	1.9990	0.7481	29.7875	0.1016	0.1093	0.1652
	2017	2.3383	0.7746	29.7875	0.1163	0.1488	0.2111
	2018	1.6453	0.8274	29.7875	0.1076	0.0857	0.1933
Lujiazui (600663SH)	2015	0.4607	0.6904	5.6871	0.3768	0.1307	0.7887
	2016	0.7888	0.7459	8.6561	0.2553	0.1611	0.5543
	2017	0.9805	0.7511	4.8424	0.3942	0.1819	0.7627
	2018	1.0487	0.7082	6.5253	0.3248	0.1801	0.7429
Pearl River Enterprises (600684SH)	2015	2.5967	22.5314	0.6642	0.1096	0.1050	0.2032
	2016	2.7690	11.7062	0.6979	0.0853	0.0922	0.1442
	2017	3.3166	12.8806	0.7164	0.1240	0.1359	0.2314
	2018	2.6038	4.2403	0.7592	0.0812	0.0685	0.1714
Jinke Property (000656SZ)	2015	1.4441	0.8395	7.6530	0.0804	0.1132	0.0636
	2016	2.0737	0.7938	8.3059	0.0795	0.0795	0.0555

The company	Year	Current ratio	Asset-liability ratio	Interest coverage ratio	Net operatin g margin	Return on equity	Profit to cost ratio
	2017	1.7105	0.8579	7.2359	0.1022	0.0945	0.0658
	2018	1.5502	0.8363	105.9207	0.1065	0.1514	0.0975
SeaZen (601155SH)	2015	1.2240	0.7954	26.1394	0.1018	0.1730	0.1728
	2016	1.1281	0.8414	16.7702	0.1128	0.1928	0.1886
	2017	1.0857	0.8584	19.7365	0.1545	0.2410	0.2761
	2018	1.1718	0.8457	19.7326	0.2255	0.2396	0.3977
ChiXia Development (600533SH)	2015	1.8394	0.6944	3.6274	0.0308	0.0429	0.0520
	2016	2.1801	0.7167	2.7952	0.0621	0.0453	0.0956
	2017	2.2147	0.7492	1.2985	0.0334	0.0148	0.0287
	2018	2.0939	0.7750	3.0533	0.0939	0.0596	0.1906
BRC (600466SH)	2015	1.4422	0.7982	5.6648	0.0542	0.0841	0.1066
	2016	1.6331	0.8090	5.3788	0.0417	0.0635	0.0814
	2017	1.6402	0.8000	5.2586	0.0509	0.0657	0.0843
	2018	1.6287	0.8204	6.8111	0.0810	0.0921	0.1313
Tahoe Group (000671SZ)	2015	2.2381	0.7987	7.3608	0.0854	0.0741	0.1438
	2016	2.4801	0.8240	7.2056	0.0827	0.0789	0.1307
	2017	2.0316	0.8783	5.2202	0.0959	0.0929	0.1483
	2018	1.5900	0.8688	7.1167	0.1262	0.1226	0.2061
Yango Group (000671SZ)	2015	1.6905	0.8042	102.5987	0.0774	0.1261	0.1334
	2016	2.1967	0.8429	50.3020	0.0730	0.0756	0.1265
	2017	1.6944	0.8566	29.1597	0.0672	0.0729	0.1329
	2018	1.5008	0.8442	11.4062	0.0692	0.0952	0.1398
CCCG Real Estate (000736SZ)	2015	3.5481	0.6344	3.2735	0.0250	0.0094	0.0464
	2016	1.8377	0.8252	4.7490	0.0383	0.0433	0.0640

The company	Year	Current ratio	Asset-liability ratio	Interest coverage ratio	Net operating margin	Return on equity	Profit to cost ratio
CCCG Real Estate (000736SZ)	2017	1.5855	0.8677	17.6701	0.1207	0.1662	0.2015
	2018	1.4316	0.8948	17.6701	0.1288	0.2723	0.2276
China Fortune (600340SH)	2015	1.3507	0.8480	5322.76	0.1301	0.1946	0.2405
	2016	1.3999	0.8478	16.9418	0.1146	0.1622	0.2132
	2017	1.5280	0.8110	14.0599	0.1477	0.1240	0.3085
	2018	1.5168	0.8665	19.1088	0.1408	0.2157	0.2914
Hongsheng Technology (600817SH)	2015	12.620	0.3958	10.0000	-2.208	-0.123	-3.012
	2016	3.3928	0.2438	10.0000	-0.660	-0.027	-0.564
	2017	2.8136	0.2634	10.0000	-0.024	-0.002	0.0997
	2018	2.4778	0.2898	10.0000	0.1260	0.0467	0.1898
GuangZhou Yuetai (600393SH)	2015	1.5942	0.8052	1.6634	0.0726	0.0422	0.1135
	2016	3.4691	0.5774	3.9711	0.1359	0.0246	0.1801
	2017	1.8604	0.6518	8.6035	0.2494	0.2151	0.4319
	2018	1.6171	0.6767	2.0130	0.0744	0.0379	0.0990
ChinaGreenElectricity Investment of Tianjin (000537SZ)	2015	1.8094	30.0000	0.6571	0.1683	0.0886	0.3434
	2016	1.9487	30.0000	0.8214	0.1366	0.1639	0.1988
	2017	1.3764	46.7289	0.8558	0.1025	0.2296	0.1666
	2018	1.3311	22.3320	0.8593	0.0925	0.2342	0.1756
Nanshan Holding (002314SZ)	2015	2,2327	0.4754	13.2862	0.0462	0.0378	0.0971
	2016	1.8170	0.5589	65.9566	0.1206	0.0926	0.2415
	2017	1.5620	0.6023	6.1021	0.1236	0.0884	0.2768
	2018	1.3559	0.6575	5.2464	0.1069	0.0698	0.2335
K I Investment (000615SZ)	2015	1.3341	0.7339	12.7971	0.1092	0.1348	0.1776
	2016	1.5139	0.7131	9.6141	0.0448	0.0972	0.0602

The company	Year	Current ratio	Asset-liability ratio	Interest coverage ratio	Net operatin g margin	Return on equity	Profit to cost ratio
K I Investment (000615SZ)	2017	2.0464	0.6930	9.7529	0.1506	0.1497	0.2519
	2018	1.4784	0.7571	3.4316	0.0443	0.0429	0.0764
Binjiang Group (002244SZ)	2015	1.5499	0.7411	13.3354	0.1192	0.1375	0.2279
	2016	1.6214	0.6825	25.6782	0.1013	0.1253	0.1858
	2017	1.4831	0.7284	14.8921	0.1677	0.1412	0.2872
	2018	1.7180	0.7794	7.4548	0.1493	0.1632	0.2858
Huafa Industrial (600325SH)	2015	2.5234	0.7930	23.8135	0.0826	0.0363	0.1476
	2016	2.4750	0.7960	34.2210	0.1074	0.0615	0.1974
	2017	2.1207	0.8288	37.7017	0.0893	0.0743	0.1618
	2018	1.7015	0.8234	14.3392	0.1013	0.0746	0.1603
AVIC Sunda (000043SZ)	2015	1.2374	0.7948	2.6223	0.0672	0.0790	0.1188
	2016	1.3020	0.7825	1.6675	0.0217	0.0290	0.0482
	2017	1.1549	0.7594	1.6935	-0.005	-0.007	0.0465
	2018	1.5119	0.6309	5.3803	0.1238	0.1687	0.1996
Xinhu Zhongbao (600208SH)	2015	1.9918	2.7022	0.7148	0.0895	0.0410	0.1457
	2016	2.2965	6.0711	0.7320	0.4291	0.1956	0.4714
	2017	2.2008	3.7985	0.7359	0.1914	0.1018	0.2781
	2018	2.0926	3.0778	0.7542	0.1563	0.0783	0.2393
Zhangjiang Hi-tech (600895SH)	2015	1.3177	0.5725	2.4417	0.2025	0.0618	0.2554
	2016	1.8016	0.5548	4.9874	0.3483	0.0858	0.5233
	2017	1.3480	0.5451	2.9395	0.3686	0.0535	0.4942
	2018	1.7748	0.5454	3.7697	0.4337	0.0557	0.6701
	2016	1.6470	0.7990	2.5661	0.0273	0.0378	0.0787

The company	Year	Current ratio	Asset-liability ratio	Interest coverage ratio	Net operatin g margin	Return on equity	Profit to cost ratio
Zhangjiang Hi-tech (600895SH)	2017	1.5511	0.8422	3.2314	0.0704	0.0885	0.1520
	2018	1.4434	0.8335	2.5815	0.0522	0.0540	0.169