A Study on the Factors of Mergers and Acquisitions of Listed Real Estate Companies and the Mode of Mergers and Acquisitions Based on the Implementation of Development Policies

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Keywords: Listed Real Estate Companies, M&A Factors, M&A Patterns.

Abstract: With the frequent emergence of M&A activities of real estate listed companies, M&A is increasingly becoming an important means for China's real estate industry to optimize resource allocation and regulate industrial structure, not only for the needs of the real estate industry, but also for the survival and operation of real estate companies (Liu 2020). This paper summarizes the current situation of M&A of real estate listed companies in China through a series of data, and on this basis, empirical research is conducted on M&A performance and some suggestions are made on M&A activities in real estate industry (Jiang, Wei 2018).

1 INTRODUCTION

The history of mergers and acquisitions of real estate listed companies in China. The mergers and acquisitions of real estate listed companies in China have developed along with the development of China's real estate market, and have been developed in the course of China's reform and opening up and the reform of the socialist economic system (Hou 2018). From the reform and opening up to the present, the mergers and acquisitions of real estate listed companies in China can be roughly divided into three stages: the primary starting stage, the transformation and development stage, and the high-speed development stage (Che 2018).

2 CURRENT STATUS OF M&A IN CHINA'S REAL ESTATE INDUSTRY

In recent years, in order to achieve scale expansion and profit growth, many real estate companies have started to find new breakthroughs through mergers and acquisitions (Wu 2017).

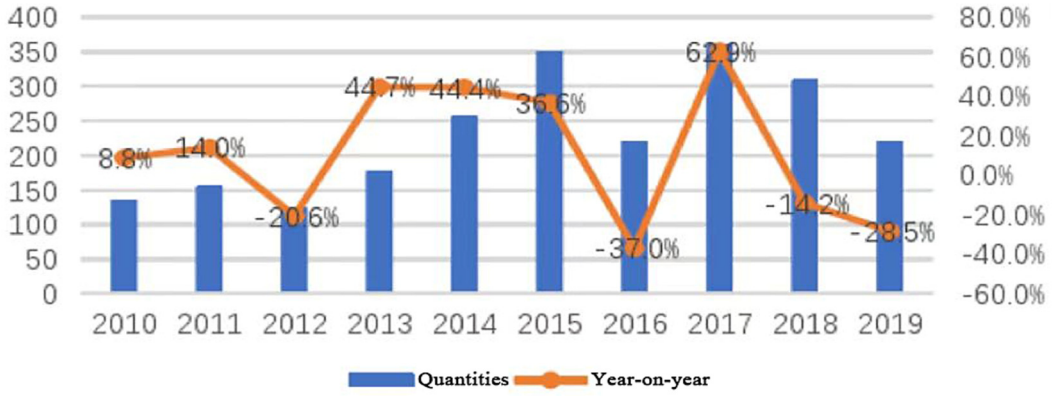

Figure 1: 2010-2019 Number of mergers and acquisitions in China's real estate industry and year-on-year growth [self-drawn].

Zhang, S.
A Study on the Factors of Mergers and Acquisitions of Listed Real Estate Companies and the Mode of Mergers and Acquisitions Based on the Implementation of Development Policies.
DOI: 10.5220/0011751300003607
In *Proceedings of the 1st International Conference on Public Management, Digital Economy and Internet Technology (ICPDI 2022)*, pages 526-529
ISBN: 978-989-758-620-0

According to Figure 1, we can see that the number of mergers and acquisitions completed each year in the real estate industry fluctuates greatly, and the growth of real estate enterprises is very rapid, but this also leads to increasing competition in the industry, coupled with the tightening of government regulation of the real estate market, making the survival environment of real estate enterprises increasingly harsh, so real estate companies have begun to take the road of mergers and acquisitions.

3 DIFFERENT M&A MODES OF REAL ESTATE ENTERPRISES

There are three specific types of M&A models: horizontal M&A, vertical M&A and hybrid M&A (Gu 2017).

4 EMPIRICAL STUDY OF M&A PERFORMANCE OF REAL ESTATE FIRMS UNDER DIFFERENT M&A MODES

The data used in the empirical study are mainly from: Guotaian Data (CSMAR) Service Center (http://www.gtarsc.com/), Wind Financial Database, Shanghai Stock Exchange (http://www.sse.com.cn/), Shen-zhen Stock Exchange (http://www.szse. cn/) (Liu 2017).

4.1 Short-Term M&A Performance Research Sample Description

Between 2007 and 2016, a total of 133 real estate M&A events that occurred in Shanghai and Shenzhen A-shares and for which M&A modes could be identified were screened and processed to obtain a total of 133 M&A events as a sample for the empirical study of short-term M&A performance (Li 2017), and the distribution of the sample after classification according to three M&A modes is shown in Table 1.

Table 1: Description of the sample for the empirical study of short-term M&A performance[self-drawn].

M&A Model	Sample size	Percentage of total sample
Horizontal M&A	92	69.17%
Vertical M&A	15	11.28%
Hybrid M&A	26	19.55%
Overall sample	133	100%

4.2 Empirical Study of Short-Term Performance Under Different M&A Models

Step 1: Define the event date and determine the event period and estimation period (Zhang 2015).

Step 2: Calculate the actual daily return Rit of the sample companies and the actual daily return Rmt of the market index.

The stock price data of the sample companies in the event period (-100, -21) and the estimation period (-20,25) are collected, and the actual daily return of the sample companies in the stock estimation period and the event period and the corresponding actual daily return of the market index are calculated, respectively (Li 2015).

The formula for the actual daily returns of individual stocks is as follows.

$$R_{it} = \left(P_{i,t} - P_{i,t} - 1\right) \Big/ P_{i,t} - 1$$

$P_{i,t}$ is the closing price of individual stock i on day t and $P_{i,t-1}$ is the closing price of individual stock i on day t-1.

The formula for the actual daily market return is as follows (Liu 2020).

$$R_{it} = \left(P_{i,t} - P_{i,t} - 1\right) \Big/ P_{i,t} - 1$$

It is the closing index of the SSE A-share index or Shenzhen A-share index on day t, and I_{t-1} is the closing index of the SSE A-share index or Shenzhen A-share index on day t-1.

Step 3: Calculate the expected normal return formula for each stock for each day in the event period (-20,25) as follows.

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \varepsilon_{it}$$

α_i is the constant term; β_i is the regression coefficient; and it is the random error.

The estimates of α_i and β_i, i.e., $\hat{\alpha}$ and $\hat{\beta}$, are obtained by regression and brought into the model to obtain the expected normal rate of return $E(R_{it})$ of individual stock i for each day in the event period as follows.

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \varepsilon_{it}$$

Step 4: Calculate the AR_{it} and AAR_t of the sample during the event period with the following equations, respectively.

$$AR_{it} = R_{it} - \widehat{R_{it}}$$

$$AAR_t = \sum_i^n AR_{it} \Big/ n$$

AR_{it} is the daily excess return of individual stock i at time t; AAR_t is the average of the sum of the excess returns of each stock at time t, i.e., the average daily

excess return of the stocks of the sample companies at time t; n is the number of samples.

Step 5: Calculate the cumulative average excess return CAR_{t1t2} for the sample during the event period (-20,25), with the following formula.

4.2.1 Analysis of Empirical Results for the Overall Sample

The total sample for the M&A performance study is 133 M&A cases of real estate listed companies, and the overall sample is subjected to a one-sample t-test at 95% confidence interval for the change in the average excess return (AAR) and cumulative average excess return (CAR) for the 46 days of the event period (-20,25) for the overall sample, as the results in Table 2 show that the positive effect of M&A activity in the short term is significant.

4.2.2 Analysis of Empirical Results for Horizontal M&As

Based on the sample of 92 M&A cases of real estate listed companies in the horizontal M&A performance study, its data of AAR and CAR for 46 days in the event period (-20,25), a one-sample t-test was conducted on the horizontal M&A sample at 95% confidence interval, and the results showed that the positive effect of horizontal M&A is significant in the short term. CAR

4.2.3 Analysis of Empirical Results for Vertical M&A

Based on the sample of vertical M&A performance study of 15 M&A cases of real estate listed companies with the number of AAR and CAR for 46 days in the event period (-20,25), a one-sample t-test is conducted on the vertical M&A sample at 95% confidence interval and the results show that the positive effect of vertical M&A is significant in the short term.

4.2.4 Empirical Analysis of Hybrid M&As

Based on the sample of mixed M&A performance study of 26 M&A cases of real estate listed companies, the data of their AAR and CAR for 46 days in the event period (-20,25), a one-sample t-test was conducted on the mixed M&A sample at 95% confidence interval, and the results showed that the positive effect from mixed M&A in the short term is significant. In terms of statistical significance, the positive effect of M&A activity in the short term is significant.

Table 2: Results of the overall sample CAR significance test[self-drawn].

	Test value = 0					
Test Subjects	t	Df	Sig. (Double Tail)	Average value	Difference Lower Line	Upper 95% confidence interval
Overall CAR	8.237	45	.000	.00654	.00494	.00814

Table 3: Results of the horizontal sample CAR significance test[self-drawn].

	Test value = 0					
Test Subjects	t	Df	Sig. (Double Tail)	Average value	Difference Lower Line	Upper 95% confidence interval
Horizontal M&A CAR	2.479	45	.017	.00234	.00044	.00425

Table 4: Results of the significance test for Vertical M&A CAR [self-drawn].

	Test value = 0					
Test Subjects	t	Df	Sig. (Double Tail)	Average value	Difference Lower Line	Upper 95% confidence interval
Vertical M&A CAR	10.739	45	.000	.01505	.01223	.01787

Table 5: Results of the significance test for Mixed M&A CAR [self-drawn].

	Test value = 0					
Test Subjects	t	Df	Sig. (Double Tail)	Average value	Difference Lower Line	Upper 95% confidence interval
Mixed M&A CAR	8.235	45	.000	.01819	.01374	.02264

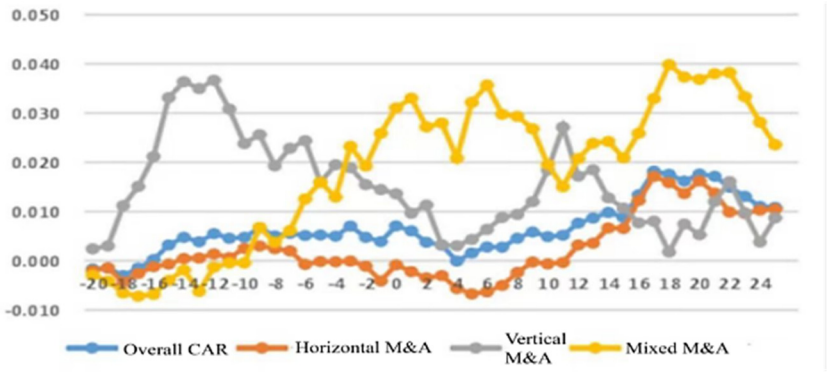

Figure 2: CAR comparison chart for the three M&A models[self-drawn].

4.2.5 Comparative Analysis of Three M&A Models

As can be seen from Figure 2, the trend of CAR for the horizontal M&A sample is basically consistent with that of the overall sample, while vertical and hybrid M&As differ significantly from the trend of CAR for horizontal M&As. Overall, CARs for all three are positive most of the time, indicating that all three M&A modes have a favorable impact on the acquirer firm in the short term. The comparison of the cumulative excess returns of the three M&A models shows that hybrid M&A brings more short-term wealth to the shareholders of the company.

5 CONCLUSION

From the above, we can draw the following conclusions: the empirical analysis of the overall sample shows that M&A activity brings significant positive effects. And the separate empirical analysis of the horizontal, vertical and mixed M&A models shows that all three M&A models bring favorable effects to the acquiring firm in the short term, but the mixed M&A brings more short-term wealth.

6 DISCUSSION

This paper analyzes the current situation of M&A of real estate listed companies in China and introduces the advantages and disadvantages of three M&A models. Through empirical analysis it is finally concluded that in the short term, all three modes of M&A bring significant positive effects to the companies and mixed M&A brings more short-term wealth to the companies. A series of problems of real estate M&A can be found, and based on these problems, the following suggestions are made: choosing M&A targets reasonably, ensuring the supply of resources in the M&A process, and strengthening the post-M&A integration.

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