AN ANALYTICAL STUDY ON THE MERGERS AND ACQUISITIONS OF CHINESE REAL ESTATE DEVELOPERS

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by

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CERTIFICATE OF ORIGINALITY

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ABSTRACT

As the biggest emerging market, China is experiencing a boom of mergers and acquisitions (M&As, hereafter) in all types of business enterprise. The Chinese real estate industry is one of the most active industries involved in this M&As wave. After 30 years of fast growth the industry is experiencing structural change and adjustment, with M&As becoming one of most important strategies adopted by Chinese real estate developers to ensure their survival and competitiveness. However, few studies have addressed these significant M&As issues in the Chinese real estate industry.

The primary aim of this research is to investigate the performance of Chinese real estate developers' M&As, and to identify the factors affecting the performance. To achieve these research aims, the research focuses on two specific issues:

I. Performance evaluation of developers' M&As

Measuring the performance of developers' M&As is to investigate whether such M&As enhanced value or not for the developers involved. This study adopts event study to

analyze the performance of developers' M&As firstly. To avoid the limitation of event studies and provide a comparison, therefor this study presents a hybrid data envelopment analysis (DEA) and Malmquist total factor productivity (TFP) indices method to evaluate the efficiency and productivity changes of developers' M&As.

Regarding to the result of event studies, the long-term performances of acquirers are generally decreases on average after acquisitions. And, the results of the DEA method show that developers' M&As are associated with: Some technology progressive are achieved in short-term after M&As. All other efficiencies are decreased in long-term after M&As. However, there is no evidence that developers achieve any short or long term scale efficiency improvements after M&As.

Through comparison analysis of these two methods, it illustrates that the DEA method proposed in this study is suitable to be used to measure the performance of M&As.

II. Analysis of factors affecting the performance of M&As

The relationship between factors and M&As performance are identified by regression analysis. Some factors obey the

general explanation of M&As theories. Other factors reflect the specific characteristics of the Chinese real estate industry. Key factors include the following: The long-term performance of related M&As are better than that of the diversified M&As; Growth acquirers obtained better performance than value acquirers; Acquirers can obtain better performance when taking over a target with a higher level of cash; Target's profitability as measured by the target's returns on equity and return on assets have a positive effect on the M&As long-term performance; and Acquirer's cash and growth opportunities are positively correlated with the long-term performance of the merged enterprise.

This study concludes that M&As are an important strategy for developers to achieve growth, improve efficiency, and expand to new market sectors. Therefore, understanding the mechanism of M&A based in the real estate industry context and applying them carefully in the process of M&As deals from the decision-making, through deal execution to post-acquisition can improve the performance and mitigate the risk in future M&As deals for Chinese developers.

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CHAPTER 1. INTRODUCTION

1.1 RESEARCH BACKGROUND

China as an emerging market is experiencing a boom of mergers and acquisitions (M&As, hereafter). In particular, in the recent 10 years both the value and numbers of M&As conducted by Chinese firms have increased dramatically due to the rapidly growing GDP and its staggering foreign exchange reserve (Hui and Qi, 2010). Although the bulk of studies about M&As have been done in such developed markets as the US and Europe, there are rarely studies on the M&As of emerging markets like China. That is because in the past 100 years, the four previous waves of M&As occurred in these developed markets, and the emerging markets like China were involved only in the recent wave of M&As, namely, the fifth wave of M&As. Much of the foundational M&As research like Jensen et al (1976), Jensen, M.C. (1986), Healy et al (1992), Agrawal et al (1992), and Loughran (1997) etc. were published in 1980's-1990's, which is not sufficient to guide the practical deal-making in this wave due to the tremendous changes of economic background and market environment such as the appearance of emerging BRICs and challenges within traditional developed economies such as Europe and the US. Although China

is the largest emerging market in the world and M&As deals taken by Chinese firms make a huge leap in recent years, the research of M&As on the basis of the Chinese context is relatively rare and in its infancy phase. Consequently, this study chooses China as a representation of emerging markets to investigate.

Why select the Chinese real estate industry? The real estate industry is one of the most active industries involved in the M&As activity, of which others include the energy & resource industry, financial service industry, manufacturing industry, and Healthcare & Life Sciences industry etc. Among them, real estate is the fastest-growing industry since its formation and development in the 1980's following China's policies of reform and opening up. After 30 years of development, the Chinese real estate has been growing into a perfectly competitive industry, while the other industries in China are mainly under the control of state-owned enterprises (SOEs). Due to the Chinese government enacting a series of national real estate market regulatory policies to mitigate the risk of real estate bubbles, the real estate industry is experiencing a wave of M&As to survive and remain competitive in the tough market environment. Another feature of M&As in the real estate industry is that almost all these M&As activity are domestic M&As, while the other industries' M&As are dominated

by cross-border M&As. Based on the above mentioned reasons, this study chooses the Chinese real estate industry as the research object.

The real estate industry in China has experienced tremendous changes during the last thirty years since China adopted the "open-door" policy in 1978. In the past thirty years, China has adopted comprehensive reform programmes in all industry sectors, which promoted fast development of various industries and boosted huge growth of the nation's economy in overall. In this regard, the reforms of policy in ownership of property, taxation, and land supply have provided a vibrant operational environment for the development of the real estate industry in China (Choi, 1998; Hinton and Tao, 2006). Under this circumstance of a market boom, the real estate industry has grown dramatically to become one of the pillar industries in China in only three decades. However, government concern is now being paid to the soaring property prices in China since the beginning of the 21st century. Indeed, since 2004, the central government has adopted a series of macroeconomic regulatory policies to rein in the overheated real estate market (Zhang and Fung, 2006). In particular, the government unveiled a series of real estate adjustment measures, like tightening up monetary policy and a house purchase restriction

policy, that have exerted immense pressure on the real estate companies in recent years. Under this intense pressure, the real estate industry market has been restructured and consolidated further and developers in China need to strive for survival through all kinds of business strategies. Among them, the M&As is one of the most commonly used strategies. A wave of M&As has swept the Chinese real estate industry in recently years, coinciding with the consolidation of the real estate market. According to the records of Zdatabase produced by Zero2IPO Research Center, both of the number of deals and the volume of M&As transactions have been increasing sharply since 2006 as shown in Fig.3-3 and Table3-5. Especially, the real estate industry market had continued its strong momentum of 2010 and witnessed a boom in M&As in the first half of the year 2011. Data released by Zdatabase revealed that the M&A deals conducted in the real estate industry outperformed all other industries in the first two quarters of 2011 and it has always been among the briskest industries involved in M&As in the past five years. Despite being triggered by government macroeconomic regulatory policies, there are many other economic motivations behind the wave of M&As in Chinese real estate industry.

Comparing with establishing new business and firms, growth

through M&As is an easier way, since it reduces risks and save resources and efforts through taking over existing firms as well as an existing market. Therefore, M&As is the most attractive expansion strategy compared to others. In order to maintain the competitive edge in the rapidly changing, fierce and competitive real estate market, Chinese developers also adopt M&A as one of the core strategic options to enhance their competition by realizing economies of scale and market expansion. However, a high rate of failure in other sectors M&As deals should taken as warning when conducting takeovers or mergers by Chinese real estate developers. Numerous scholars stated that the M&A failure rate is as high as approximately 50% by investigating the US and EU empirical study (Agrawal and Jaffe, 2000). The failure means that the performances of consolidated entities created by M&A fail to fulfill anticipated performance or are even worse than the sum of acquirer and target separately. The high ratio of poor operational performance of post-merger enterprises illustrates that firms which want to grow through M&As need to pay more attention to the potential risks (Hunt, 1990; Business Week, 1995). There are lots of factors which may have an impact on the performance of M&As. Blindly purchasing a firm through M&A without justified and appropriate strategic planning for expansion might lead to a

nightmare or disaster in finance or organization for an acquirer, as well as the target. Owing to this reason, a large number of previous studies have been conducted to mitigate the risk of failure of M&A and to enhance the performance of post-acquisitions from all sorts of different perspectives. The representative theories of these explanation issues are summarized from different perspectives by various researchers, such as Haspeslagh and Jemison (1991). They categorized these theories into four types: capital markets school, strategy school, organizational behavior school and the process perspective; Larsson and Finkelstein (1999) identified five themes including strategic management, economics, finance, organizational research, human resource management; and Sudi (2010) considers the M&A as a process of five stages such as strategy initiation, organizing for acquisition, deal structuring, post-acquisition integration and post-acquisition audit. M&A is a very complicated issue involved with multiple disciplines. However, fragmentation of research on M&As issues has resulted in barriers to the development of more integrated theories on M&A. For example, studies from economic perspective identified good overall performance and efficiency for M&A, while other studies from finance perspective reported just the inconsistent results or even opposite conclusion. Similar barriers exist among the other

perspectives like strategic versus finance, organizational versus human resource management etc. Even worse barriers in M&A research involves, for example, the strategy, economic and finance scholars disregarding the research of organizational and human resource perspectives, and vice versa.

Despite of above mentioned dilemma in the existing research, very few scholars have investigated the M&As activities in real estate industry, especially under the Chinese context. Since the special characteristics of Chinese real estate industry, it is important to make clarity of understanding of the real estate developers' strategy motivations of M&A to mitigate the risk of failure of M&A deals and enhance of the performance of post-acquisitions. Hence, there is urgent need to make an in-depth investigation and analysis to the Chinese real estate industry's M&A activities. The purpose of this study is to identify whether M&As deals conducted by Chinese real estate developers make economic sense from the perspective of the firm's performance and to shed light on the motivations for M&As by analyzing the characteristics of the Chinese real estate industry.

1.2 SCOPE OF RESEARCH

It is necessary to define the scope of the study mainly because the

research area of M&A in any given business sector comprised of multiple subjects. According to P.C. Haspeslagh and D.B. Jemison (1991), the general processes of M&A comprise the initial idea of M&A, its justification, due diligence and negotiation, acquisition and integration. These stages can be divided into two phases according to the problems it should be resolving, including decision-making process problems and integration process problems. The Decision-making phase is the first stage of making M&A deals and also plays important role in the process of the M&A deal, because the quality of decision-making not only influences the decision-making process itself, but also has an effect on the integration phase of involved entities. In this latter phase, the strategic motive for making M&A should be clarified to give a guiding principle for the whole of the deal making process. The integration stage is also a very important phase for achieving the predicted profit of M&A and realizing the synergy effect of the takeover. All in all, a clarifying statement of the scope of the research of M&A is of vital importance to the research and helps to concentrate study efforts.

This study will first identify the recent literature on the issues of M&A so that it provides an up to date review on research trends and the theoretical foundation for the research. Then the activities

of M&A in the Chinese real estate industry will be described. However, due to the M&A research arena covering lots of issues, study all of these subjects related with real estate industry's M&As extensively and comprehensively within the length of a thesis is not possible. Thus, the scope of this study has been narrowed in three ways. First of all, this study will focus on domestic M&A, as the cross-border M&A are rarely conducted by Chinese real estate developers in recent years. Secondly, due to the emerging of the Chinese real estate industry market only after China adopted "open-door" policy in 1978, the industry has grown rapidly and changed tremendously in the last three decades. Unsurprisingly, the deal value and number of M&As conducted by real estate industry firms have begun to leap only since 2000 as shown in Figure 3-3. Hence, to illustrate the new trend of M&As in real estate industry and provide the up to date information, this study will concentrate on relatively recent transactions data for conducting an empirical study, specifically from 2000 to 2010 inclusive. Moreover, the term "real estate industry" generally refers to a broad type of activities involved in a real estate project development process, from the land acquisition, finance, design and planning, construction, sales and agent or brokers, facility and property management (Kummerow and Lun, 2005). Each of those activities and services

are provided by different kinds of corporate entity which are all considered as real estate industry firms. It is not easy to deal with all of these types of business simultaneously, and even it will make the analysis and conclusions with no meaning for each of them. Therefore, this study will study the general real estate developers which refer to the Standard Industrial Classification (SIC) codes. To concentrate on general developers' activities, the businesses with SIC code 6531 or at an equivalent of real estate in Chinese List Company's industry classification (industry code J) will be included in the study. The specific selection standard for the research object will be given in detail in the data collection section. In summary, this research focuses on the real estate developers' M&As transactions in recent years.

In terms of the scope of the research questions related to M&A issues, this study will focus on the analysis of potential motivation of M&As for Chinese real estate developers and establish a method for evaluation of the developers' post-acquisition performance. In the last three decades, the scholars from different arenas like finance, strategy, organization, culture and management have conducted a bulk of researches to analyze the motivation behind the M&As from their own perspectives based on the US and EU market environment and economic regimes. However, China as an

emerging market has its specific economic regime and undeveloped market, and the real estate industry is one of most special industries in China involved various external business environments including economic, policy, legal, social and technological etc. (Zhang X.L, 2010). Therefore, the existing motivational theories may not explain the M&As activities occurring in the Chinese background. Furthermore, in terms of Chinese real estate industry firms, they might have their own specific reasons and motivations for conducting M&As. Hence, this is the first issue of M&A related the Chinese developers needing to be investigated in this study.

The measurement of post-acquisition performance is the second research question of this study. Although much attention has been paid to the various methods for evaluating the performance of the M&As in a general business domain, the commonly used methods include such three categories as event studies, cash flow analysis, and market value frontiers (Asquith et al., 1983; Franks and Harris, 1989; Cornett and Tehranian, 1992; Healy et al., 1992; Sudarsanam et al., 1996; Lyon et al., 1999; Andrade et al., 2001; Mitchell et al., 2004; Antoniou et al., 2008). However, as Antoniou et al (2011) stated, these widely adopted performance measuring methodologies in M&As all have their limitations such as their

inability to reflect the meaningful insight and usable information regarding the core question of whether M&As create value. Due to the concern of the academic research about the businesses is merely focus on their long-term survival and sustainable development by continuously reinventing themselves to successfully meet the evolving needs of consumers, while continuously facing up to the ever-lurking threats of competition, complacency, and obsolescence, the research of M&As as one of important strategies of business should also comply with the same rules. Therefore, the performance evaluation of M&As should reflect reality of value adding to business creating by M&As. To overcome the failure of these commonly used performance measuring methods and realize the objective of measuring the real value creation of M&As, this study adopts event study and a DEA based Malmquist Productivity Index to analyze the effect of M&As on the performance of entities involved. Event study is the most commonly used method in the financial research area, which will be introduced in chapter 2. Productivity is one of the core factors to maintain the competitiveness for an organization. Hence, through measuring the productivity change between pre-acquisition and post-acquisition of evolved entities, it can clearly detect the effect of M&A on the real business performance

of entities.

Based on Farrell's idea, Charnes et al. (1978) proposed a powerful methodology subsequently named data envelopment analysis (DEA), which satisfies the requirement for assessing the relative efficiencies of multi-input and multi-output production units. DEA, as a non-parametric method for measuring organization's performance, is widely adopted to evaluate the efficiency of decision making units (DMUs) and assess their relative efficiency. DEA detects "best practice" efficiency frontiers existing in an industry, through which the efficiency of each firm is evaluated by comparing with the front-runners (leading companies) in an industry. The major advantages of DEA over other methods that determine efficiency like cost–benefit analysis or regression include: there is no need to select a particular functional form, to establish a distributional assumption and to set up the relative weights of the variables, it is very convenient to detect the efficiency and productivity changes of each firm due to its result is individual firm based, and it has good statistical characteristics. (Charnes et al, 1978; Cooper, et al, 2007a, 2007b)

Malmquist (1953) proposed a quantity index for measuring the standard of living for the purpose of consumption analysis. The Malmquist index was first adopted to analyze productivity by

Caves et al. (1982). Since then, most of the studies adopted the Malmquist index to evaluate the total factor productivity (TFP) change for a particular organization/firm between two periods, s and t, although in the spirit of the original proposition, the Malmquist index could be applied in other areas equally well (Cooper et al, 2007; Kortelainen, 2008). Nischimizu and Page (1982) applied a parametric programming method to calculate the index for the first time in the empirical context and then it further developed and popularized it as an empirical index by Färe et al (1994a,b). They decomposed the change of TFP into two primary aspects, namely, technical change and technical efficiency change and adopted non-parametric mathematical programming models for its calculation. Malmquist indexes have several desirable features and properties over other indices, such as they have no need to make behavioral assumptions like cost minimization or profit maximization, which make them useful when producer's objectives differ, or are unknown or are unachieved; they have no need to provide price information which makes them practicable when either prices do not exist, distorted or have little economic meaning; and they can be easily calculated by the DEA methodology (Caves et al. 1982; Färe et al,1995). Based on the above discussion, therefore, this paper adopts the DEA-based

Malmquist Productivity Index method to evaluate the performance of real estate industry firms' M&As.

1.3 RESEARCH AIM AND OBJECTIVES

M&As deals conducted by real estate developers are supposed to enhance the efficiency of involved entities and, simultaneously, create shareholders' value. However, there is little research conducted to analyze the M&As activities in the Chinese real estate industry. Therefore, to bridge this research gap in the real estate industry and Chinese M&As arena, this research is an attempt to conduct a comprehensive study of M&As that have taken place in the real estate industry under the current Chinese environment. The primary aims of this study are to investigate the motivations for M&As in the Chinese real estate industry, to establish a systematic post-acquisition performance evaluation methodology for real estate industry acquirers, to identify the potential relationships between the motivations and post-acquisition performance, and eventually, to provide guidance and decision-making reference for the academic researchers and practitioners to mitigate the risk of failure when dealing with the M&As deals of real estate industry firms.

According to the aims of the research, four objectives will be

concentrated in this research, include:

1. To investigate strategic motives of conducting M&As deals for real estate industry firms;

2. To construct an appropriate performance evaluation method for real estate industry firms' M&A transactions, short-term & long-term performance of post-acquisition, and measure the performance of post-merger of Chinese real estate developers using the proposed evaluation method;

3. To identify the relationship between the strategy motives and performance of the post-merger entities through the empirical study, and then classify the motives according to the importance for real estate industry firms; and

4. To draw conclusions from the above studies and to make recommendations for enhancing the performance of M&As transactions for real estate industry firms in the future.

In summary, the research will focus primarily on the research within and across each of these four objectives.

To accomplish the above four objectives, the following questions will be answered with justified interpretation:

Based on the motivational theory, some motives are supposed to produce positive results of performance of post-acquisition entities. Can these motives be supported by the empirical study of the real

estate industry firms?

Which motives will play a key effect on the post-acquisition performance of M&As for real estate industry firms?

Are there any differences of performance result by using different measuring methods? Why does the difference produce? How to interpret these differences?

And finally, what kinds of lessons can be learned from the empirical study by the real estate firms for their future M&As transactions?

1.4 RESEARCH METHODOLOGY

The methodology adopted herein mainly depends on the research objectives and the logic of the study. The research began with a detailed literature review to obtain a clear understanding of up to date theories on M&As. A study on strategies requires a longitudinal approach be taken so that the development and breakdown of patterns can be reconstructed (Mintzberg, 1978: Miller, 1981). The research analyzes the possible motivations of M&As for Chinese real estate developers and their potential impact on the performance of M&As firstly, and then empirical studies are conducted to measure the performance of post-acquisition entities and examine the relationship between the

motives and performance. Several research methodologies are adopted to fulfill above-mentioned research aim. An extensive and critical literature review are conducted at first to summarize and abstract the possible motivations of M&As for Chinese real estate industry firms, and to represent merits and demerits of the existing post-acquisition performance evaluation methods. Then the classical event study method, namely, Buy-and-hold abnormal return (BHAR) method, are used to measure the long-term post-acquisition performance of acquirers. To avoid the defects of the event study, the study simultaneously applies a DEA based Malmquist Productivity Index to analyze the effect of M&As on the performance of acquirers. A comparison analysis is carried out to distinguish the difference of performance measurement result between the event study and DEA method. And finally, regression analysis and statistical inference are used to verify the relationship between strategic motives and performance of M&As deals. Two or more methods, either qualitative or quantitative, may be combined to achieve a certain objective. Details of the research methodology are discussed in the Chapter of Research methodology

1.5 SIGNIFICANCE OF RESEARCH

This study contributes to the academic and industry practice in several ways. Firstly, Chinese real estate industry acquiring firms are investigated in this study, which thus represent evidence within the emerging markets with a different market environment and a different regulatory regime from traditional developed markets like US and EU. For example, one of the most important differences in between the US and China is the form of M&As antitrust regulation. In the US, the antitrust regulation is much stricter than that in China. Courts may proceed against acquisitions on market concentration grounds alone in the US, while China's antitrust law has passed in 2007. Furthermore, US firms more frequently apply all kinds of anti-takeover strategies like shareholder's rights plan, poison pills, and shark repellent. However, because two-thirds of a typical firm's shares were held by the state and the companies themselves, and were untradeable before 2005, the market for corporate control in which companies and investors compete for control of other firms has been virtually non-existent in China. As a result, most of the M&As were achieved through negotiation and then required state approval as well. A hostile takeover bid for a financially underperforming company - the most prominent weapon in the Western arsenal for corporate control - could rarely attract the shares required or win government approval (Neng

Liang, 2010). Additionally, cash payments are adopted in the majority of Chinese takeovers, whereas stock payments are generally used in US M&As deals (Eckbo and Thorburn, 2000; Loughran and Vijh, 1997). All in all, those differences between US and China markets could affect the target selection process, the propensity of M&As activities, the price paid, and more importantly, the post-acquisition performance.

Secondly, much more attention has been paid in the methodologies issues in this study to ensure that result of post-acquisition performance are consistent across different chosen methodologies . Accordingly, both an event study of buy-and- hold abnormal return and a DEA based method are used to mitigate the methodological problems in the study. Furthermore, the robustness of results are identified by testing the effect of such deals and firm-specific factors as corporate governance of acquiring firms and target type on the long-term post-acquisition performance of acquirers.

Thirdly, a comparative analysis between the long-term performances of post-acquisition evaluated by event study and efficiency exchange result measured by DEA method are conducted to examine the consistency. Previous studies about long-term abnormal returns like Rau and Vermaelen (1998) assume that the market gradually reassesses the quality of acquiring firms

as the result of acquisition become clearer. Similarly, our result shows that long-term performances of acquirers decrease on average, but acquirers' total productivity has steady growth. Other efficiency exchange results of acquirers are complicated.

Finally, this study is the most comprehensive research on the M&As issues of the real estate industry in the current Chinese market environment. Although the Chinese M&As activities have leaped in recent years, the studies investigating the long-term post-acquisition performance of acquirer are scarce, and even it can be regarded as one of the first studies in the real estate industry. Thus, this study fills a large research gap in both Chinese M&As and real estate industry arena.

This research contributes to the knowledge of strategic management and M&As for real estate industry firms. It may fulfill the knowledge gap of M&As theory application in real estate industry, especially in motives and performance measuring of M&As for real estate industry firms. It also provides contributions to knowledge of relationship between strategy motives and performance of M&As tailored specially for real estate industry firms. All in all, the findings of this research could provide scholars in this research arena a valuable reference for their future study.

Also, the findings of this research are constructive in practical use, and will benefit the industrial practice in dealing with M&As. The result of effective motives of M&As and scientific measuring performance of M&As transactions could help industry practitioners to conduct M&As deals successfully. A guideline for M&As decision making is provided for supporting the practitioner's application in M&As deals to mitigate risk of failure of transactions.

1.6 STRUCTURE OF THE DISSERTATION

This study comprises 6 chapters. The main content of each chapter is introduced as following:

The current chapter introduces general overview of the research. It presents the contents including the research background, scope of research, research aim and objectives, research methodology, significance of research, and structure of the dissertation. Following that, a comprehensive literature review on the basic of M&As theories are presented in Chapter 2, which include theory explanation for M&As, motivation theory of M&As, and performance evaluation theory. This critical literature review provides an in-depth theoretical foundation for analysis of the Chinese real estate industry M&As activities of this study. In

addition, several research gaps of current studies are identified based on the critical review.

In chapter 3, the research background of this study is described, which contains the overall introduction of the Chinese M&As market situation, general features of Chinese corporate governance, the development of the Chinese real estate industry and real estate market, as well as M&As activities occurring in the real estate industry. Through the literature review, the strategic motives of M&As for real estate industry firms were identified firstly within the context of strategic management and the historic and current views of M&As within the real estate industry.

The theoretical research framework and methodology of this study is established in the chapter 4. This chapter presents such content as sample selection and data collection, long-term post-acquisition performance evaluation method, evaluation and impact indicators establishment, and estimation window selection.

Chapter 5 describes and discusses the research results of this study. It summarizes the statistical features of acquirers and targets, deals characteristics, and description of indictors firstly. And then, the long-term performance result evaluated by event study and the efficiency and productivity exchange measured through DEA method are presented. It is followed by the comparative analysis

between these two methods. Finally, factors affecting the performance of M&As are discussed.

Lastly, chapter 6 draws conclusions from the research and provides guidelines for future M&As deals in the real estate industry. The contribution and limitation of this study are also summarized. Finally, the future research agenda is recommended.

CHAPTER 2. LITERATURE REVIEW

2.1 THEORY EXPLANATION FOR M&As

Generally, M&As means purchase of an entire company or specific assets by another company, which implies that a new entity is formed by combining the existing assets. It is considered that the new entity will be more productive than the sum of the independent entities respectively, so synergy effects will be achieved. Therefore, M&As has been viewed as an efficient strategy for corporate growth because M&As allows firms to quickly achieve their ideal size and raise managerial efficiency. M&As plays a significant role in the expansion of business and growth of firms, which is more efficient than through internal organic growth alone. The growth is of critical importance to a firm, which means that the firms will get more chance to access more customers, a higher promise of quality profile investors and employees. Hence, by conducting M&As, firms could realize economies of scale, reduce operation costs, improve revenues, and increase growth opportunities. Based on these advantages of M&As, therefore, the volume of M&As activity in both deal numbers and dollars in the world has reached records in last few

years. According to Thomson Financial (2007), the volume of worldwide M&As declared reached US$4.5 trillion in announced deals and US$3.8 trillion in completed transactions, which is 24% increase over the previous record in 2006. The M&As completed in worldwide are illustrated as following table 2-1. The Asia-pacific area reached the highest increase by 61.1%, which just takes account 10% of worldwide M&As deals value. M&As deals increased 27.1% in America followed by Europe with 18.2%. By comparison, the M&As transaction value decreased by 27.6% in the Africa/Middle East area. In terms of the type of transactions, the cross-border M&As activity accounted for 47% of worldwide since global consolidation continued to drive activity in various sectors.

Table 2-1 Worldwide completed M&As in 2007

Region	Rank value (in USD billion)	No of deals	Change in value (compared with 2006) (%)
America	1979.3	11567	27.1
Africa/Middle East	39.9	443	-27.6
Asia – Pacific	378.4	5504	61.1
Europe	1298.7	9915	8.2
Worldwide	3784.1	28729	23.9

Source: Thomson financial (2007, p.3)

This wave is the latest in a series of which date far back to 19th century, so that the global economy has experienced five waves of M&As since identifying the first merger wave in the USA

beginning in 1897 (Gaughan, 1994). Notwithstanding the high volume of M&As transaction records, however, like other business deals, failure rates for acquirers is very high with between 45% and 82% on a wide variety of measures, which identified by numerous performance studies spanning more than 40 years (cf. Kitching, 1967; Jensen & Ruback, 1983; Hunt, 1990; Jarrell & Poulsen, 1994; Mueller, 2003). Hence, the high ratio of poor operational performance of post-merger entities illustrates that corporations which wants to grow through M&As also need to pay more attention to the potential risks (Hunt, 1990; Business Week, 1995).

Since M&As activities can be understood from different perspectives, scholars tried all sorts of means to explain the phenomena of M&As and also established many different theories to interpret the M&As activities. As an important theoretical foundation for this study, the theories of M&As should be understood fully. Through an extensive review of literature, it is found that excellent summaries have been concluded by Jensen and Ruback (1983), Jensen (1988) and Roll (1988). Merger theories can be categorized into three types according to whether value is created or merely redistributed among corporate stakeholders, or behavior of manager. The three types of theories used to explain M&As from different perspectives are briefly

described as following: Efficiency theory, redistribution theory, behavioral theory.

2.1.1 Efficiency Theory Explains M&As Activities

From efficiency perspective, the intention of M&As is to enhance the competitiveness of the organization and ultimately achieve value growth for the shareholders. Value increasing by M&As means that the value of the combined firm via M&As is greater than the sum of the value of the respective separate entities involved. Hence, it is generally believed that firms can realize growth more quickly through means of M&As than via organic growth. Based on this point, the M&As activities increase dramatically especially during extreme turbulence of the economic environment. The profound changes in the economic environment have given an enormous impetus to the new wave of M&As in recent years. These changes include: 1) technical change at higher speed than ever before since the appearance of information technology, biotech science, energy-saving technology; 2) the emergence of new industries as leading forces of economic, such as information industry, low carbon and environmental protection Industry; 3) sharp reductions in the cost of communication and transportation and greatly improved

accessibility; 4) a trend in deregulation that has already became inevitable in many industries as is the establishment of many world bodies like WTO, which aim to boost free trade, as well as IMF,WB; 5) internationalization of the world markets ; and 6) much greater competence in various fields. These changes in the economic environment actually require firms to adjust rapidly for survival, which creates a great potential role for M&As as it can enable firms to adapt to the changes more quickly than through internal organic growth. These factors are supported by many studies from general industry research as well as studies of individual industries. In general industry, Mulherin and Boone (2000) found that the M&As activities increased greatly in industries undergoing deregulation and other change forces. Many research works have been conducted from individual industry. Through investigating the world oil industry, Weston, Johnson, and Siu (1999) found that the oil firms M&As activity are connected with the fluctuation of the oil price. Fan (2000) also identified that oil price instability induced petrol-chemical firms to conduct M&As. Becher (2000) stated that the deregulation of the banking industry triggered a wave of M&As in this industry. To handle the challenge of the high-cost of R&D, the pharmaceutical industry firms conducted more M&As deals than ever before (Weston,

2001). In additional, Gaughan (2007) and Krishnamurti & Vishwanath (2008) have provided a detailed summary of theories related to the efficiency enhancement, which include differential efficiency theory, inefficient management theory, synergy, pure diversification, strategic realignment, and undervaluation, etc. A detailed interpretation of these theories can be referred to in the above-mentioned studies.

2.1.2 Redistribution Theories Explanation

Different from the efficiency theory, redistribution theories consider that the M&As do not produce efficiency gains but only enable wealth transfer from the other parts of involved entities to the bidders. The redistribution theories generally consist of tax saving theory and monopoly theory.

In terms of tax saving theory, it can be regarded as an additional source of synergy since they represent a case of redistribution of wealth from the government or public to the firm (Weston. et.al, 2001). Another redistribution theory is monopoly theory, in which M&As is considered as a route to achieve market power. Conglomerate M&As may have advantages in the following ways: The firm can cross-subsidize products. For example, profits from the position in one market are used to sustain a fight for market

share in another market. The firm can simultaneously limit competition in more than one market. The firm can also prevent potential entrants into its markets. One possible way to realize this is concentric acquisition by a market leader. These kinds of advantages have been regarded as collusive synergies (Chatterjee, 1986) or competitor interrelationships (Porter, 1985). With the gradual evolution of the economic environment in recent decades like deregulation and internationalization, it is becoming more and more difficult to achieve this kind of conglomerate M&As.

2.1.3 Behavioral Theories Explanation

Different from the above mentioned two theories, namely, efficiency and redistribution theory, which suppose that conducting M&As deals is aim to improve the firms efficiency or enhance the shareholder’s value, the behavioral theory interprets the M&As deals from the viewpoint of the M&As deal's decision-makers’ behaviors, which may lead to the M&As activities taking place without making economic sense. From an extensive review of literature, the behavioral theories generally include two types, say, managerial agency problem & hubris. Regarding the managerial agency problem, it is actually the agency problem occurring in the acquirer, which leads to an M&As transaction taking place only

considering the interests of managers but ignoring the benefit of shareholders. There sometimes exist inconsistencies between the managers' interests of the acquiring firms and their shareholders' goal. These kinds of situation generally happen when an agent (the manager) is motivated by self-interest and acts at the expense of the shareholders (Baiman. 1990). In particular, when managers can get more incentive and compensation like bonus or power of control from the M&As deals, they will have more passion to take part in the M&As activities without considering the interest of shareholders.

On the part of the hubris hypothesis, some authors, like Roll (1986) propose a "hubris motive" and suggest that acquirer's managers have an inflated sense of confidence about their ability to extract value from targets that will often motivate M&As deals. Actually, Hubris theory is not a real indirect motive for an M&As, since managers do not acquire another company for the sake of overpaying for it. M&As deals that can be explained by hubris may be motivated by either synergy or agency, but whenever the acquirer over-pays. The over-payment under hubris can happen in the two kinds of situations either when it is very difficult to evaluate the target's true value or when there are other factors affecting the bidding price such as competition for the control of

the target.

2.2 MOTIVES FOR M&As

Different motives for M&As may lead to an absolutely opposite performance of the post-merger entity. While applying the M&As strategy under suitable motives can realize the win-win performance for both target and acquirer, inappropriate use of the strategy to purchase a firm without any reasonable motives for expansion might induce a nightmare or disaster in finance or organization for the acquirer, as well as target. Owing to this reason, various studies have been conducted from different perspectives to detect the relationship between M&As motives and the performance of the post-merger entity. Some representative theories of these motives explanation issues are summarized from different perspective by various researchers, such as Haspeslagh and Jemison (1991) who categorized these into four types: capital markets school, strategy school, organizational behaviour school and the process perspective; whilst Larsson and Finkelstein (1999) identified five themes including strategic management, economics, finance, organizational research, human resource management. These two very different classifications illustrate the wide range of motives behind M&As. In addition, fragmentation of the research

has resulted in barriers to the development of a more integrated theory on M&As. In particular, studies from an economics perspective identified good overall performance and efficiency for M&As, while other studies from a finance perspective reported simply inconsistent results or even a reverse conclusion. Similar barriers exist among the other perspectives like strategic versus finance, organizational versus human resource management, etc. A more significant barrier in M&As research involves, for example, the strategy, economic and finance scholars disregarding the research of organizational and human resource perspectives, and vice versa.

Therefore, each type of theory can only explain individual phenomenon from each situation upon which it based. Owing to the lack of a general theory or principle which can explain all of the motivational issues, the bulk of previous studies were carried out to understand the issues of motive, performance and the relationship between them based on different kinds of industry with specific attention to industries such as finance, banking, or the service industry etc. In the case of the real estate industry, obviously different from these others, little research can be found focusing on this topic. Hence, this study intends to analyze the motives, performance and their relationship of M&As deals carried

out by real estate industry enterprises through an empirical study, based on an extensive literature review of general theoretical foundation in the M&As research domain.

M&As deals can be deemed as an equity investment in enterprises, while other investments may mainly focus on projects or specific businesses, all of which usually compete with each other within a firm and may together comprise a firm's investment strategy. Since each investment has its specific motives and objectives regarding the firm, so does the M&As deal. The motives and aims for making an M&As deal from the bidding firm's perspective are different across the various industries and the emphases are also placed very differently (e.g. Walter and Barney, 1990; Brouthers et al., 1998). Most scholars agree that mergers are driven by a complex pattern of motives, and that no single approach can explain all of situation in M&As (e.g. Steiner, 1975; Ravenscraft and Scherer, 1987). Hence, this study carries out an extensive literature review in an attempt to classify the merger theories according to their prerequisites and consistency with the evidence. The motives of M&As presented by scholars could be classified into various types from different perspectives. Based on the economic, market and financial perspectives, the motives for M&As can be categorized into the following three types: namely,

the efficiency theory (realization

n of synergy potential), monopoly theory (enhancement of market power), and hubris theory (mistakes in evaluating the target) (Roll, 1986; Trautwein, 1990; Berkovitch and Narayanan, 1993). Herein, the review of each of these motives will be presented in the following.

2.2.1 The Efficiency Theory

The efficiency theory explains that making M&As deals can improve the financial, production and managerial efficiency of corporate via synergy brought by combination of entities. In other words, the consolidation entity created by acquirer and target can yield greater value than the sum of the acquirer and target separately. A great many scholars, like Friedman and Gibson (1988); Bradley, Desai, and Kim (1988); and Trautwein (1990), suggest that firms make M&As deals to achieve synergies, which stem from combining operations and activities such as marketing, research and development, procurement, and other cost components that were operated by separate firms. Synergistic gain can be achieved from different sources of value gains such as increasing the target's value, economies of scale and scope, increasing market share and power, and taking advantage of tax

and exchange rate differentials between countries.

2.2.1.1 Increasing the Target's Value

Synergistic gains can be achieved when the target's value is increased through M&As by acquirers. In another words, the value of entity by combining acquirer and target will greater than the sum of them separately. Actually, Increasing the target's value can occur mainly in two ways: to reduce an agency problem in the target and to decrease the target's management inefficiencies.

2.2.1.1.1 Correcting the Agency Problem of Target

In the case of an agency problem, it happens when an agent (the manager) is motivated by self-interest and acts at the expense of the shareholders (Baiman. 1990). Despite the expectation that managers are supposed to maximize shareholder wealth though all sorts of effective management, conflict in the objectives of managers and the shareholders is a very common problem. For example, the more dividends are paid to shareholders, the less resource will be controlled by managers, which reduce the power of managers, and the more likely for the firm to obtain finance from outside. Hence, the acquirer can increase the target's value and create synergistic gains by reducing the agency problem in the target.

The agent problem existing in the target can be detected by three methods. The first one is to analyze its free cash flow. Following the definition given by Jensen (1986), the free cash flow is cash flow in excess of the amount needed to finance all projects with positive net present value discounted at the relevant cost of capital. Jensen also formulates a theory to detect the agent problem by analyzing free cash flow, and to provide solutions for reducing the agency cost. Based on the Jensen's theory (1986), Stulz (1990), and Lang, Stulz and Walkling (1991) have made some extensions, which suggest that an agency problem can be detected by examining the firm's level of cash flow and growth opportunities. For example, high levels of cash flow, but low growth opportunities imply the presence of an agency problem. Another method for identifying an agency problem is to examine the firm's debt. Debt decreases the agency costs of free cash flow by decreasing the cash flow available for managers to spend (Jensen and Meckling, 1976, and Jensen, 1986). According to the monitoring effect of debt, a firm with a sub-optimal debt level may suggest the presence of an agency problem (Jensen and Meckling, 1976, Jensen, 1986, Stulz, 1990. Maloney, McCormick, and Mitchell, 1993, Berger, Ofek and Yermack, 1997). Levels of ownerships by management are used as the third method to

examine an agency problem. As proposed by Jensen and Meckling (1976), and then applied in Amihud and Lev (1981), Slusky and Caves (1991), Ambrose and Megginson (1992) and Himmelberg, Hubbard. and Palia (1999), ownership can be utilized to align the interests of managers and shareholders. The less the managerial ownership managers take, the less intention to contribute shareholder value the managers will have, which leads to an agency problem.

2.2.1.1.2 Reducing Target's Management Inefficiency

Another way to increase the target's value and achieve synergy is to reduce its managerial inefficiencies. The acquirer can solve the target's managerial inefficiency problems to enlarge its value and realize the synergic gain. The largest synergistic gains might be realized when an efficient firm acquires a relatively inefficient firm (Servaes, 1991). Hence, it is important to detect the target's existing inefficiency management problem which can be improved afterward prior to make M&As deal. Palepu (1986) asserted that the target's return on equity (ROE) prior to deals can be utilized as an index for measuring the target's management efficiency. Alternatively, Delong (2002) suggest that firm's management efficiency can also be evaluated by the firm's return on assets

(ROA). To measure the firms' efficiency, actually, ROA is better than ROE, since managers can enlarge ROE by reducing the firm's equity without increasing any actual return. However, to compare a firm's efficiency change before and after M&As deal, ROE could be a better choice than ROA, due to the asset value being changed after the M&As deal. Additionally, Tobin's Q is also used as an indicator for assessing the target's management efficiency by many scholars like Lang, Stulz., and Walkling (1989), and Weston et al. (2001). Tobin's Q is an increasing measure of the quality of the firm's current and anticipated projects under the current management (Lang et al., 1989). Thus, low levels of Tobin's Q, defined as a value of less than one would indicate an inefficient management. Likewise, tender offers can further be used to detect the target's management inefficiency since tender offers suggest the acquirer's intent to replace the target's management by extending an offer to buy shares directly from its shareholders and bypassing its management. Martin and McConnell (1991) identified high management turnover in the target following tender offers. Hence, tender offers can be used as a proxy for cases in which the acquirer plans to alleviate the target's management inefficiency.

2.2.1.2 Economies of Scale and Scope

Another important synergic gain can arise from economies of scale and scope. Operating synergies theory assumes that economies of scale exist in an industry, and that the levels of production in both acquirer and target prior to M&As do not exert their full potential for economies of scale. For example, some economies of scale can be realized in manufacturing operations or in research and development if the acquirer and target belong to the same industry (Weston et.al, 2001). Furthermore, economies of scale can also be achieved by vertical integration within the same industry, which enhances the coordination at different stages of production and reduces transaction costs and bargaining (Arrow, 1975 and Klein, Crawford, and Alchian, 1978). M&As deals in which the acquirer and target belong to the same industry are more likely to be motivated by economics of scale synergy (Slusky and Caves, 1991). Hence, one simple method to identify the economics of scale is to check whether the acquirer and target belong to the same industry.

2.2.1.3 Financial Synergy

Financial synergy can be obtained by reducing the costs of internal financing (Weston et al., 2001). For example, acquirer firms can

lower their cost of capital by acquiring firms with high levels of cash. Therefore, M&As deals involving targets with high levels of cash are motivated further by a desire for financial synergy. Another method to identify possible financial synergies is to calculate financial slack, which are considered as the difference between the target and acquirer's financial leverage (Slusky and Caves, 1991). Difference of financial leverages means differences in the firms' costs of capital, which imply that financial synergies may arise in the M&As deal.

2.2.1.4 Tax Savings

Tax savings can be an additional source of synergy since they represent a case of redistribution of wealth from the government or public to the firm (Weston. et. al, 2001). In additional, synergic gains can also be achieved by taking advantage of exchange-rate differentials (Kish & Vasconcellos, 1993) and tax differentials between the host and home countries in cross-border M&As deals (Servaes & Zenner, 1994). However, the existing literature has not found the synergies resulting from tax savings sufficiently significant to motivate an acquisition (Auerbach and Reishus, 1988, Hayn, 1989, Ghosh and Jain, 2000, Weston, et at, 2001).

2.2.2 Redistribution Theory

2.2.2.1 Monopoly Theory

The monopoly theory regards M&As as a route to achieve market power. Conglomerate M&As may have advantages in the following ways: The firm can cross-subsidize products. For example, profits from the position in one market are used to sustain a fight for market share in another market. The firm can simultaneously limit competition in more than one market. The firm can also prevent potential entrants from its markets. One possible way to realize this is concentric acquisition by a market leader. These kinds of advantages have been regarded as collusive synergies (Chatterjee, 1986) or competitor interrelationships (Porter, 1985). Different from the efficiency theory, Collusive synergies based on monopoly do not produce efficiency gains but only wealth transfers from the firm's customers. As the real estate industry is a segment market with many participants, even the leader of which has only a little market share comparing with other high market concentration industry, it is hard to establish a monopoly market in real estate industry. Therefore, the motive for achieving conglomerate the may not be the one of main motives for conducting M&As deals by real estate developers.

2.2.2.2 Tax Savings

Tax savings can be an additional source of synergy since they represent a case of redistribution of wealth from the government or public to the firm (Weston. et. al, 2001). Therefore, the tax saving theory can also be understood for wealth redistribution aspects. Actually, it is one of important component of redistribution theory, through which wealth can be transferred from government to the acquirers.

2.2.3 Behavioral Theory

The efficiency motivated acquisition imply that the incentives of managers of the acquiring firms and their shareholders are coincident, and the acquisition is aim to increase the acquiring firm's value. However, when managers conduct the M&As transaction based on their own benefit rather than taking into account the interest of shareholders, these kinds of motive of M&As deals can only be explained by behavioral theory, generally including agency problem and hubris theory.

2.2.3.1 Agency Problem of Acquirer

Similar agency problem will also happen in acquirers. It happens when an agent (the manager) is motivated by self-interest and acts at the expense of the shareholders (Baiman. 1990). Despite

managers are supposed to maximize shareholder wealth though all sorts of effective management, conflict in the objectives of between the managers and the shareholders are very common problem. Hence, the manager of the acquirer would conduct a M&As deal for improving their own benefit (like bonus from firm's growing or more power of control) but disregarding the interest of shareholder or even on the basis of cutting down the earning of shareholders.

The agent problem existing in the acquirer can also be detected by the same three methods as already described. These methods can refer to the above introduction in agency problem of target.

2.2.3.2 Hubris Theory

Some scholars, like Roll (1986) propose a "hubris motive" and suggest that acquirer's managers inflated sense of confidence about their ability to extract value from targets will often motivate M&As deals. Actually, Hubris is not a real indirect motive for an M&As, since managers do not acquire another company with the intention of overpaying for it. M&As deals that can be explained by hubris may be motivated by either synergy or agency, but whenever the acquirer over-pays. The over-pays under hubris can happen in the two kinds of situations either when it is very difficult to evaluate the target's true value or when there are other factors

affecting the bidding price such as competition for the control of the target.

2.2.3.2.1 Difficulties in Valuation of Target

Difficulties in evaluating the target when making M&As deals may leads to hubris. Ambrose and Megginson (1992) extend the Palepu (1986) model to predict the likelihood of acquisition by using tangible and intangible assets structure, managerial ownership, and takeover defenses. Ambrose and Megginson (1992) assert that fixed assets are easier to assess than growth opportunities since the realization of growth opportunities depends on variety of variable environment factors like managers' capability, market fluctuation etc. Thus the higher proportion of intangible assets the target has, the more inaccurate valuation and poor decision the acquirer will make. In additional, if the target has high levels of research and development (R&D) expenses, then making a precise evaluation of it also will become more difficult, which is because the R&D expenses , like other intangible assets, are difficult to value since their outcome is uncertain.

2.2.3.2.2 Multiple Bidders Competition

Bidding competition for acquiring the target might also cause a

case of hubris. Varaiya (1988) detects factors associated with cases of overestimation of targets in corporate takeovers. The factors identified to be related with overestimation were the pre-acquisition profitability of the acquirer (consistent with Hayward and Hambrick. 1997) and the degree of competition for acquiring the target firm. Based on the theory of order statistics, Varaiya explains that the larger the number of bidders, the greater the expected value of the winning bid. Therefore, the likelihood that the acquirer will overvalue the target, which contributes to a case of hubris, increases along with the degree of competition.

2.3 PERFORMANCE EVALUATION OF POST-ACQUISITION ENTITIES

There is extensive empirical evidence on the performance of takeover entities and comparison across decades. These notable studies include the following: Jensen and Ruback (1983) made an interesting survey on M&As prior to 1980; Jarrell et al. (1988) studied the 1980s takeover wave; Bruner (2003) focused on the 1990s M&As wave; and Sudi's (2003) study covers several decades. In this section, a comprehensive review and summary on the earlier studies are conducted to provide a theoretic base for the thesis.

Although many studies have concluded that there is a very high ratio of failure in M&As transactions from the standpoint of performance of deals (Hunt, 1990), most researchers appear to attribute the negative post- acquisition performance to estimation bias (Jensen and Richard, 1983 and Roll, 1986). Not surprisingly, various performance measures are sensitive to the estimation technique (G. Mandelker, 1974). It is the mutation feature of M&As transactions which a sudden evolution from two separately companies to a single entity that lead to the difficulty of establishing a comprehensive performance measurement. Furthermore, the M&As as a management decision differs from many other capital investment decisions such as R&D, advertising promotion and staff training, whose effects on firms' performance will need time to validate. M&As can also be regarded as processes (Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986). This means that M&As unfold over time, are affected by inherent ambiguities (Jemison & Sitkin, 1986), and that value creation takes place not just after the announcement or when the deal is closed, but also during the post-acquisition phase (Haspeslagh & Jemison, 1991). Therefore, the effect of M&As transaction on shareholder's value creation can not be assessed only immediately by market stock reaction as a short-term performance, but also can be

evaluated by the long-term performance in a relative long time period. There exist many types of methods measuring the enhancement of operation performance actually from the M&As deals, which is still active field of research and remain a challenge need to be overcome. Through an extensive literature review of M&As studies on performance published in top-tier management journals from the 1970s to date, Olimpia and Annette (2010) found that the definitions of M&As performance were almost as many as the studies, in terms of operational definitions, indicators, temporal orientations, and units of analysis (Meglio & Risberg, 2009). For example, on the one hand, M&As performance can be measured from the perspective of the target's or acquirer's shareholders, or the combined shareholders wealth effect; On the other hand, although various stakeholders are impacted by the takeover, shareholder wealth is considered as the primary objective of the performance evaluation in finance theory as the shareholders are the residual owners of the combined entities. Since nearly each study detects the relationship between different types of variables based on its own definition of performance, it is difficult to formulate a coherent or consistent definition and method for assessing M&As performance. The commonly used methods for evaluating the performance of M&As deals generally include two

types like examining stock return of acquirer and measuring the operation performance of acquirer via using financial and accounting data. A brief introduction of these methods will be firstly provided, and then their limitations will be summarized in the following.

2.3.1 Examining the Stock Return of Acquirer

To investigate the effect of M&As transaction on the performance of the acquirer, event study was adopted by many scholars to examine the stock return of acquirer. The event study methodology was first proposed by Fama, Fisher, Jensen and Roll (FFJR) in 1969. The FFJR paper was suggested by James Lorie, with the only purpose "*to have a piece of work that made extensive use of the newly developed CRSP monthly NYSE file, to illustrate the usefulness of the file, to justify continued funding*." (Fama 1991, p. 1599). Unexpectedly, a large number of papers on event studies written over the past several decades has become an important part of financial economics and has been widely used in accounting and economics, as well as finance. (Kothar and Warner, 2005). Prior to that time, "*There was little evidence on the central issues of corporate finance. Now we are overwhelmed with results, mostly from event studies*" (Fama, 1991, p. 1600). In a corporate context,

the usefulness of event studies arises from the fact that the magnitude of abnormal performance at the time of an event (like takeover) provides a measure of the (unanticipated) impact of the event on the wealth of the firms' shareholders. Therefore, event studies focusing on short-term effects around the announcement of an event provide evidence relevant for understanding corporate policy decisions (like M&As) (Kothari and Warner, 2005). Event studies also play an important role in capital market research as a way of testing market efficiency. Abnormal returns that persist in a long-term period after an event are inconsistent with market efficiency. Accordingly, event studies focusing on long-term effect following an event (like takeover) can provide key evidence on market efficiency (Brown and Warner, 1980; Fama, 1991). Thus, the application of both short-term and long-term event study methodology in the academic literature has increased significantly since 1970s. Many scholars have presented very detailed surveys on event studies. For interested readers, the following are some good examples. Kothari and Warner (2005), Agrawal and jaffe (2000), MacKinlay (1997) and Campbell, Lo, and MacKinlay (1997) document the origins and breadth of event studies. Despite experiencing over 3 decades development of event studies, the basic statistical format of event studies has not changed, and it still

based on the table layout in the classic stock split event study of Fama et al. (1969). Its key focus is still on measuring the sample shareholders' mean and cumulative mean abnormal returns around the time of an event like takeover. However, there are two main changes of event study practice that have happened in the methodology. The first one is that use of daily instead of monthly stock return data has become more popular. The second one is that the methods used to evaluate the abnormal returns have become more complicated. This change is of particular importance for the long-term event study. Even if the methods improved significantly, the serious limitations of long-term event study have still remained. It can be understood that long-term event study "require extreme caution" (Kothari and Warner, 1997, p. 301) and even using the best methods "the analysis of long-term abnormal returns is treacherous" (Lyon, Barber, and Tsai, 1999, p. 165). In contrast, the short-term event study is straightforward and trouble free and its result provide more confidence and reliability. Short-term event studies have become the dominant approach to analyze shareholder wealth effects since being introduced by Fama et al. (1969). The event study assumes that an M&As announcement brings new information to the market, so that investors' expectations about the firm's prospects are updated and reflected in the stock prices.

Conventionally, an abnormal return equals the difference between the observed returns on the stock for time period t either daily or monthly relative to the event and an expected return, which are predicted through a particular model by benchmark the non-takeover firms. Setting R_{it} as a simple observed return of a sample firm i on the period t (month or daily) relative to the event, $E(R_{it})$ is expected return of firm i on the period t (month or daily), which is predicted through a particular model of expected returns by benchmark a non-takeover firm. The abnormal return of firm i on period t equals to the difference between the observed return and the predicted return: $AR= R_{it}- E(R_{it})$. Accumulating across τ periods yields a cumulative abnormal return (CAR_{it}) of firm i: $CAR_{it}=\sum_{t=1}^{\tau} AR_{it}$. Short-term event study represent the "cleanest evidence we have on efficiency" (Fama, 1991, p. 1602), but the interpretation of long-term study results is problematic. Zollo and Meier (2008) reported that the majority of M&As studies have measured the short-term performance using the event window approach (window select from two days to six months surrounding the announcement) to analyze abnormal stock returns of the acquirer. However, even though event studies are statistically rigorous, the time period studied is relatively short (Fowler and Schmidt 1989). In addition, as Oler et al. (2008) asserted that using

event studies with short windows to evaluate the short-term performance of M&As transaction also have severe drawbacks in that positive initial stock market reactions to M&As deals, and are usually inconsistent with negative long-term post-M&As earnings. Accordingly, using event study to detect stock reaction surround the M&As announcement may not exactly measure the economic earnings from the M&As deal, but instead reflect only shareholders' expected performance for the event.

Event study is also adopted to measure the long-term, say one to five years after event, effects of M&As on shareholder wealth, but has several shortcomings. First of all, for a long-term event study it is more difficult to isolate the takeover effect from many other strategic and operational decisions or changes in the financial policy arisen in the long interval. Secondly, the benchmark performance often suffers from measurement or statistical problems (Barber and Lyon, 1997). These problems consist of new listing bias which arises during long-term period firms that constitute the index (or reference portfolio) typically include new firms that begin trading subsequent to the event taken place; rebalancing bias which arises because the compound returns of a reference portfolio, such as an equally weighted market index, are typically calculated assuming periodic (generally monthly)

rebalancing, while the returns of sample firms are compounded without rebalancing; and skewness bias which appearances because long-run abnormal returns are positively skewed. Barber and Lyon (1997) stated that the cumulative abnormal returns (CAR) are a biased predictor for long-term event study. Thus, they questioned the validity of standard parametric tests for long-term performance using cumulative abnormal returns (CAR). Therefore, it is not suitable to evaluate the long-term performance of M&As deals by using cumulative abnormal returns (CAR). To address this problem, two main methods for assessing and calibrating post-event risk-adjusted performance are adopted by scholars to measure long-run abnormal stock returns: characteristic-based matching approach and the Jensen's alpha approach, which is also known as the calendar time portfolio approach (Fama, 1998; Eckbo, Masulis, and Norli, 2000; Mitchell and Stafford, 2000).

2.3.1.1 BHAR Approach

Since the most notable studies of Ikenberry, Lakonishok, and Vermaelen (1995), Barber and Lyon (1997), Lyon, Barber, and Tsai (1999), the buy-and-hold abnormal returns BHAR (or also known as the characteristic-based matching approach) has been widely used. Mitchell and Stafford (2000, p. 296) describe BHAR returns as "*the average multiyear return from a strategy of investing in all*

firms that complete an event and selling at the end of a pre-specified holding period versus a comparable strategy using otherwise similar nonevent firms". The BHAR of Firm i in T interval period long-term event can be calculated by following equation:

$$BHAR_i(t,T) = \prod_{t=1 \text{ to } T}(1 + R_{i,t}) - \prod_{t=1 \text{ to } T}(1 + R_{B,t}),$$

Where R_{it} is the return of firm i in t period, and R_{Bt} is the expected return of firm i in t period which equivalent to the return on either a non-event benchmark firm that is matched to the event firm i or it is the return on a matched (benchmark) portfolio. According to the studies of Daniel et al. (1997), Barber and Lyon (1997) and Lyon, Barber, and Tsai (1999), two methods are commonly adopted to calculate the expected return, by using (i) a reference portfolio returns, such as market index return, and (ii) control firm returns such as a matching firm based on size and book-to-market value ratio. As stated by Barber and Lyon (1997), the reference portfolio method suffers a new listing bias, a skewness bias and a rebalancing bias. Control firm benchmark method are free from the above biases, because control firms must be listed in the event month which avoids any new listing bias, returns on both the sample and control firm are measured without rebalancing which eliminates the rebalancing bias, and both the sample and the

control firms might equally obtain large positive returns which solves the skewness problem. However, neither the reference portfolio method nor the control firm method accounts for cross-dependence among acquisition events, which poses a serious problem to event-time based long-term performance methodologies such as BHAR. Therefore, cross-correlation in abnormal returns considered in long-term event studies cannot be ignored, even if the event is not clustered in calendar-time (Brav, 2000; Kothari and Warner, 2005; Mitchell and Stafford, 2000).

2.3.1.2 Jensen-alpha Approach

The Jensen-alpha approach, also named the calendar-time portfolio approach, is an alternative to the BHAR method to evaluate the risk-adjusted abnormal performance. Jaffe (1974) and Mandelker (1974) firstly introduced a calendar time methodology to the financial-economics research arena, and since then it has been adopted widely by many scholars, the most typical works including Fama (1993,1998) and Mitchell and Stafford (2000). To adopt the Jensen-alpha approach to analyze abnormal return of a sample of firms experiencing a corporate event (e.g., an M&As or IPO etc), the resulting time series of monthly excess returns is regressed on the Capital asset pricing model (CAPM) market factor, or the three Fama and French (1993) factors, or the four Carhart (1997) factors

as follows:

$$R_{pt} - R_{ft} = a_i + b_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + m_i UMD_t + \varepsilon_{it}$$

Where:

-R_{pt} is the simple monthly return on the calendar-time portfolio (either equally weighted or value-weighted);

- R_{ft} is the risk-free rate;

- R_{mt} is the return on a value-weighted market index;

SMB_t is the difference in the returns of value-weighted portfolios of small stocks and big stocks;

-HML_t is the difference in the returns of value weighted portfolios of high book-to-market stocks and low book-to-market stocks;

-UMD_{it} is the difference between the return on the portfolio of past one-year winners and losers;

-a_i is the average monthly abnormal return (Jensen alpha) on the portfolio of event firm i over the T -month post-event period,

-b_i, s_i, h_i, and m_i are sensitivities (betas) of the event portfolio to the four factors.

The inferences about the abnormal return of event firm i is on the basis of the estimated a_i and its statistical significance. The application effect of Jensen-alpha approach is mixed in the recent research, such as Mitchell and Stafford (2000) and Brav and

Gompers (1997) made some favorable remark on the Jensen-alpha approach, while Loughran and Ritter (2000) object to use it.

The Jensen-alpha approach has two advantages comparing with either cumulative or buy-and-hold abnormal returns (Lyon, J., Barber, B., Tsai, C., 1999). First of all, it addresses the problem of cross-sectional dependence among sample firms because the returns on sample firms are aggregated into a single portfolio. Then, it yields more robust test statistics in nonrandom samples.

However, despite extensive studies conducted about the above two types of long-term event study, there is still no clear winner in a horse race (Kothari and Warner, 2005). Both of them have low power against economically interesting null hypotheses, and neither is immune to misspecification (Jegadeesh and Karceski, 2004). Regarding to the several power and specification problems, the challenge of refining long-term event methods remains for scholars. Whether BHAR approach, Jensen-alpha approach or some combination of them can best address long-term event problems is still an open question (Kothari and Warner, 2005).

2.3.2 Measuring the Operation Performance of Acquirer

In addition to using the event study method to measure acquirers' abnormal returns over the short-term and long-term, another

approach also adopted by scholars is measuring the acquirer's operation performance by using the financial and accounting data. This method aims to assess the actual economic gains of the firm from a M&As transaction. Given the M&As deal does really enhance the value of shareholders, the operation performance of firm will reflect the economic earning from the M&As transaction. The approach consists of a comparison of accounting measures used to proxy firms' operation performance prior and subsequent to a takeover. These accounting measures include such financial ratios such as: net income, sales, number of employees, return on investment (ROI), return on sales (ROS), return on equity (ROE), return on net assets (RONA), leverage, firm liquidity, profit margins, and comprehensive index, etc. For example, Powell (1996) found that return on sales is a commonly used measure of financial performance in strategy research, whereas it is possible to integrate financial ratios of a firm into a single index, for example Altman's Z score, to obtain the more integrated comprehensive performance of a firm. However, these financial ratio-based accounting analysis methods are also extensively criticized. Taking the ROI, for example, many scholars argued that it is not a true indicator of the economic rate of return, since the income (the numerator in the ROI formula) is an outcome of investment made in the past, but

the assets (the denominator) can be expected to have had an influence not only on past and current earnings but also on future earnings (Jacobson, 1987; Meeks and Meeks, 1981). Undoubtedly, other financial ratios have similar problems.

Another accounting method for measuring the operation performance is assessing operation cash flow (OCF) return. Many scholars use the OCF return to measure the operation performance of the acquirer since it is believed that OCF represent the actual economic gains from the assets (Healy et al, 1992), and reflects the true economic impact of the M&As transaction (Anand and Singh 1997). However, this method also has defects. Healy, Palepu, and Ruback (1992, 1997) report that the industry-adjusted cash flow returns after takeovers vary depending upon whether the premium paid to target firms is taken into account.

In additional, despite accounting-based methods have been widely used in assessing firm performance, this approach is criticized by many scholars for its drawbacks in explaining shareholder wealth maximization. The method only evaluates the operation performance of the acquirer using accounting data, but without considering the cost of capital. Hence, there is no mechanism in this approach to check whether the enhancement of operation performance adds value for shareholders. That may lead to the

following situation appearing: even when an acquirer obtained a positive net income and high accounting rate of return after M&As transaction, the value of shareholders decreased since the profit is less than the expect earnings which shareholder could have achieved from investing in another business with similar risks. Furthermore, the accounting measures might be manipulated, which imply the accounts may not be true and actually reflect the firm's financial situation. These problems are especially serious in assessing the acquirer's operation performance as it just experienced a sudden transformation in its operation with relative complicated and ambiguous financial structure. Furthermore, since different studies examine different accounting ratios of performance (such as ROS or ROA), it makes it difficult to compare results.

2.4 FACTORS AFFECTING THE M&As PERFORMANCE

Regarding to the M&As performance, Agrawal and Jaffe (2000) have conducted a thorough and comprehensive review of past influential studies on the long-term post-acquisition performance of acquirers. They inferred that the studies after Franks et al. (1991) demonstrate strong evidence of abnormal under-performance

post-acquisition. Following the detail review of Agrawal and Jaffe, these relevant studies are summarized as the following Table 2-2.

Table 2-2 Key studies on long-term post-acquisition performance

Study	**Data**	**Methodology**	**Event period**	**Result**
Asquith (1983)	196 NYSE successful acquirers and 87 unsuccessful acquirers (1962–1976)	Beta control portfolio to get abnormal return	Completion date 240 Days following outcome date	-7.2% Cumulative abnormal return for the successful bidders and -9.6% cumulative abnormal returns for the unsuccessful bidders
Malatesta (1983)	256 US acquiring firms over 1969–1974	Market model; separate calculation for pre- and post-event beta	Announcement date: +1 to +6 months +7 to +12 months	-5.4% abnormal return (AR) for +1 to +6 months and -2.2% AR for the +7 to +12 months
Franks et al. (1991)	399 NYSE/AMEX acquisitions over 1975–1984	Eight-portfolio model	Announcement Date: 36 months	Insignificant AR both for event time and calendar-time approach
Limmack (1991)	448 Completed bids and 81 abandoned bids over 1977–1986 (UK market data)	Three control methods: market model, adjusted beta model and Index model	Announcement Date: 24 months	Completed bids: -14.96%, -4.67% & -7.43% Abandoned bids: -24.2%, -26.25% & -7.38% -10.26%
Agrawal et al. (1992)	937 Mergers and 227 tender offers over 1955 to 1987 (NYSE /AMEX firms)	Size and beta adjusted portfolio formation and regression	Completion date: 60 months	Significant AR for mergers; No significant AR for tender offers
Gregory (1997)	452 UK firms over 1984–1992	6 different methods	Completion date: 24 months	-11.8% to -18% significant AR depending on method used
Loughran and Vijh (1997)	947 NYSE /AMEX/ NAsDAQ firms (788 Merger & 135 tender offer)	Buy hold abnormal return (after size and BV/MV	Completion date: 60 months	-15.9% significant AR for mergers in 60

		adjustment)		months; No significant AR for tender offers
Rau and Vermaelen (1998)	2823 Mergers and 316 tender bids over 1980–1991	Control portfolio with size and BV/MV adjustments	Completion date: 36 moths	-4% Significant AR for mergers; +8.56% significant AR for tender offers
Mitchell and Stafford (2000)	2767 acquisitions over 1961–1993	Three methods: BHAR; Calendar time portfolio with Fama–French Regression; Calendar time portfolio analysis	Completion date: 36 moths	No significant AR once cross-sectional dependence is taken into consideration
Moeller et al. (2003)	12,023 acquisitions (US data) over 1980–2001	Two methods: BHAR; and Calendar time portfolio formation	Completion date: 36 moths	BHAR: -16.02% significant AR over three years
Andre, Kooli, and L'Her (2004)	267 Canadian acquisitions over 1980– 2000	Calendar time portfolio with Fama–French Regression	Completion date: 36 moths	No significant AR for all cases. Negative AR for non-overlapping cases (143 cases)
Dube and Glascock (2006)	255 US acquisitions over 1975–1996	Calendar time portfolio with Fama– French Regression (three and four factors)	Completion date: 36 moths	No risk-adjusted AR of acquiring firms following acquisitions

As shown in Table 2-2, most of the studies (dominated by US studies) report negative long-term abnormal returns. However, regarding these works, two things are worth to mention here. First, as the reported results, there are a large number of controversies surrounding the Buy-and-hold methodology. For example, Mitchell and Stafford (2000) argued that if the biases in the BHAR method were eliminated, it could not yield significant long-term

abnormal returns. Second, the studies simultaneously adopting a comprehensive set of benchmarks and methodologies basically generated inconclusive evidence or no abnormal returns. For example, Franks et al. (1991), using multiple benchmarks, reported that the long-term underperformance is likely caused by benchmark errors. Through he analyzed several past studies which investigated the long-term abnormal performance following an event like takeover, IPO and etc., Fama (1998) argued that "*consistent with the market efficiency hypothesis that the anomalies are chance results, apparent overreaction of stock prices to information is about as common as under-reaction. And post-event continuation of prevent abnormal returns is about as frequent as post-event reversal*". Regardless of these arguments, there was insufficient evidence to negative long-term underperformance in the US as discussed in some of the detailed and careful studies like Rau and Vermaelen, (1998).

Also, there are several other studies that investigated the impact of a number of deal- and firm-specific factors on acquirers' long-term abnormal returns. Dutta and Jog (2009) presented a detailed summarization of these factors, as well as the rationale behind them and the relevant empirical evidences. Here, it is not intended to repeat their work and only a summary of their results is

presented as shown in Table 2-3.

Table 2-3 Factors Affecting the M&As Performance

Factor	Key arguments/ issues	Key studies
Methods of payment: Cash or stock	➢ If the acquiring firm is convinced of its current valuation, it might offer cash. ➢ If the acquiring firm believes that its shares are overvalued or is uncertain about target share valuation, it might prefer share offer ➢ It is expected that market views cash offers more favorably	Myers and Majluf (1984), Franks et al. (1991), Loughran and Vijh (1997), Gregory (1997)
Mode of acquisition: Merger or tender offer	➢ Mergers are generally friendly and are done through a share offer. ➢ Tender offers are generally hostile and are done through a cash offer. Generally more efficient managers are appointed for the target firms. ➢ It is expected that market views tender offers more favorably.	Agrawal et al. (1992), Loughran and Vijh (1997), Rau and Vermaelen (1998) and Agrawal and Jaffe (2000)
Business synergy: Related vs. unrelated	➢ Unrelated (conglomerate) mergers are less likely to succeed because managers of acquiring firms are not familiar with the target industry, or they waste free cash flow on bad acquisitions ➢ Shareholders do not prefer that the acquiring company managers diversify their operations. ➢ It is expected that market views related acquisitions more favorably	Jensen (1986), Agrawal et al. (1992) and Moeller et al. (2005)
Acquirer type: Glamour (growth) or value firms	➢ Glamour firm (with high market-to-book ratio) managers are more likely to overestimate their own abilities to manage an acquisition. ➢ Value firm managers, directors, and large shareholders may be more prudent before approving a major transaction that could determine the survival of the company. ➢ Market may view acquisitions by value firms more favorably	Rau and Vermaelen (1998)
Target firm type: Public or private	➢ Private firms are less liquid and hence offers are generally less for private targets. ➢ Firms acquiring privately held targets through common stock exchanges tend to create outside blockholders, who can serve as an effective monitor of management	Shleifer and Vishny (1986), Chang (1998), Fuller et al. (2002) and Mantecon (2008)

Relative size of target: Smaller vs. larger target	➢ It is expected that market views private target acquisitions more favorably ➢ Higher relative size of target could bring in more synergy and economic benefits ➢ Alternatively, it could be more difficult to manage a larger target firm. Further, larger targets will have greater bargaining power and can be more expensive	Eckbo et al. (1990), Agrawal et al. (1992) and Fuller et al. (2002)
Governance characteristics: Stronger or weaker governance:	➢ A stronger board (more independent directors and separate chair and CEO) and blockholders are likely to monitor managers more effectively. ➢ If managerial ownership is high, managers' interest will be aligned with that of other shareholders. It is expected that market views acquisitions by firms with stronger governance more favorably	Fama and Jensen (1983), Morck et al. (1988) and Subrahmanyam et al. (1997)

Refer to the study of Dutta and Jog (2009).

As shown in Table 2-3, various theories established in the previous studies may have potential impact on the performance of M&As and thus need to be considered when investigating the takeover result. Therefore, it is necessary to conduct a systematic analysis on the effect of these factors on the long-term post-acquisition performance of acquiring firms.

CHAPTER 3. M&As IN THE CHINESE REAL ESTATE INDUSTRY

3.1 M&As IN THE CHINESE MARKET

With the continuous rise of China's economy over the last three decades, one of the most notable achievements in China is the market-oriented reforms to improve the competitiveness of Chinese enterprises. During this period, consistent with development of market environment and reform of corporate governance regime in China, a large number of Chinese enterprises have grown up and gained competiveness. At the same time, China's M&As market has become more and more active since the 1990's. The development of China's M&As market has experienced three stages (Fang Fang, 2003). The initial stage of M&As started from 1993 to 1996, in which the amount and scale of M&As in China were small. From 1997 to 1999, it is regarded as the second stage of China's M&As market, which experienced rapid development such that the large scale, cross-industry and cross-region M&As deals were conducted frequently. However, due to lack of relevant laws and regulations, the majority of M&As conducted in this period were not market-oriented. Especially, some M&As were

usually conducted for special motives such as “tunneling” the interest of public minority shareholders. Thus, it brings the risk to the interest of shareholders, the development of companies and even the stock market, and threatens the financial stability of the society. With the enactment of the Securities Law, China Securities Regulatory Commission (CSRC) in 2000, the M&As activities in China began to be regulated and encouraged. Since then the Chinese M&As market has entered the stage of further rapid and regulated growth.

In order to get a clearer understanding of the China’s M&As market, the following section presents some basic statistic characteristics of M&As, such as the yearly, and industry distributions of M&As.

3.1.1 Summary Description of M&As in China

3.1.1.1 Historical Distribution of China’s M&As

In recent years, the Chinese M&As market has been booming and experiencing a massive wave as evidenced by the apparent rise both in the number of announced deals and the disclosed value of transactions. The scale of China’s announced and completed M&As deals during 2001-2010 are described as the Figure 3-1 and Figure 3-2 respectively. As shown in these two figures, China’s

M&As market has leaped sharply both in the deal number and the value of transactions since 2004.

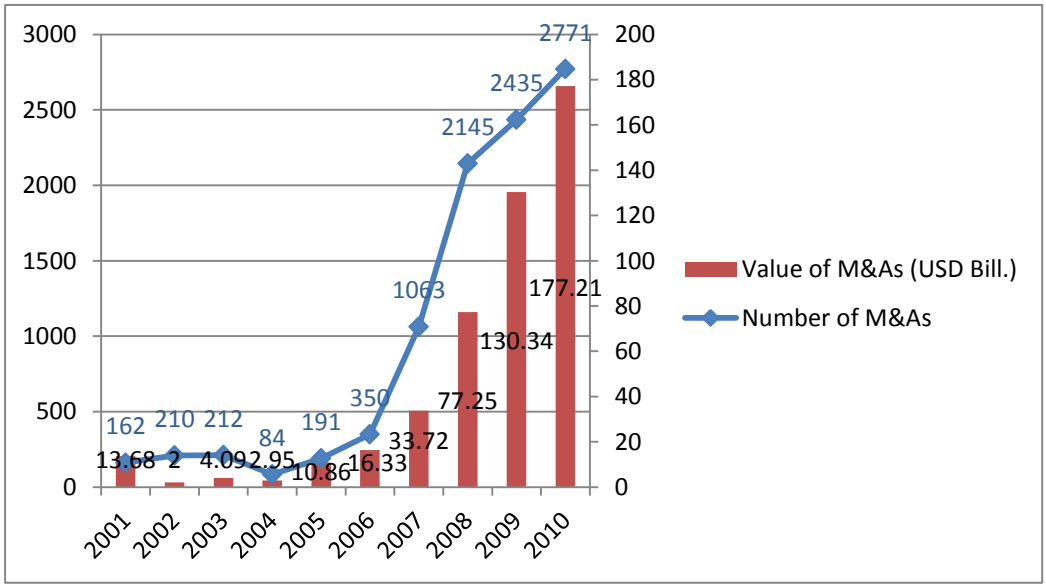

Figure 3-1. Scale of announced M&As in China during 2001-2010 (Data from CVsoure. Jan. 2011)

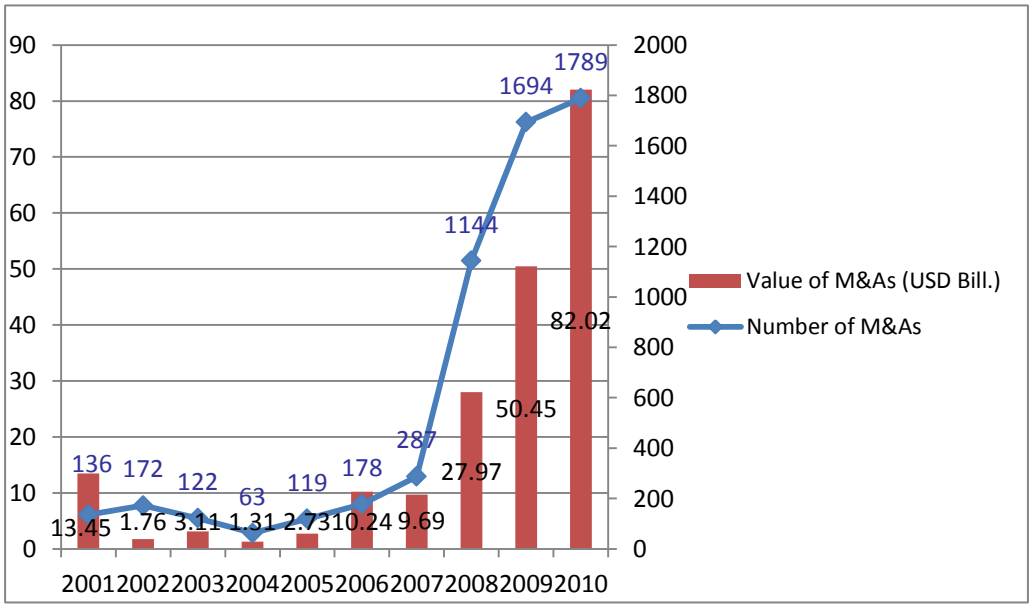

Figure 3-2 Scale of completed M&As in China during 2001-2010 (Data from CVsource, Jan. 2011)

3.1.1.2 Categories of China's M&As

In terms of the types of M&As deals, it include such three

categories as domestic, inbound and outbound M&As as shown in Table 3-1. As illustrated in the table, the number of domestic transactions dominates the overall of M&As deals in China, with 1,713 domestic completed deals accounting for 95.27%, while inbound deals (30) accounting for 1.7%, and outbound deals (55) accounting for 3% respectively. However, regarding to the value of transactions, the average value of each domestic M&As transaction is the smallest one in all three types of M&As. Total domestic transactions with value of USD 50.212 billion, accounting for 61.22%, inbound deals value of USD 2.391 billion, accounting for 2.9%, and outbound deals value of USD 29.419 billion, accounting for 35.87%. The domestic M&As has the smallest average transaction value $33.97 Mill. per deal, while the outbound M&As has the largest transaction value of each deal ($865.5 Mill.). Due to the larger size of outbound M&As deals, China's outbound M&As grabbed as high as a 35.87% share in the total amount, despite it account for only a small 3% share in the total number .

Table 3-1 Categories of M&As in China 2010.

Types of M&As	Number of deals	Disclosed No. of deals	Value of deals (USD Bill.)	Average value of M&As
Domestic	1713	1478	50211.99	33.97
Inbound	30	17	2390.52	140.62
outbound	55	34	29418.98	865.26
Total	1798	1529	82021.49	53.64

3.1.1.3 Industry Distribution of China's M&As

There are some studies investigated the M&As issues from the industry perspective. For example, Mitchell and Mulherin (1996) identified significant inter-industry patterns in both the rate and time-series clustering of takeovers. It support the Jensen's (1988, 1993) ideas that M&As is an efficient approach for an industry's restructure to adapt the change of economic environment. Despite the standard industrial classification (SIC) is a broadly adopted indicator for classifying the industries in the relevant research arena, China doesn't apply this system but formulated its industry classification criterion accordingly. In the light of the classification of the China Securities Regulatory Commission (CSRC), the industries in China are divided into thirteen main industries and each main industry is split into several sub-industries. The industry distribution of China's M&As is shown as the Table 3-2.

Table 3-2 Industry distribution of China's M&As

Industry & Code	**Year**						
	1998	1999	2000	2001	2002	2009	2010
Agriculture, forestry and fishing (A)	1.89%	2.41%	1.92%	1.56%	2.56%	1.80%	2%
Mining (B)	0.00%	0.00%	0.96%	0.78%	0.64%	1.60%	2%
Manufacturing Industry (C)	33.96%	53.01%	46.15%	56.25%	55.59%	20.90%	25%
Power, Gas and Water Supply (D)	9.43%	2.41%	4.81%	4.69%	5.11%	10.90%	13%
Construction	3.77%	1.20%	1.92%	2.34%	2.56%	4.45%	5%

(E) Transportation and Storage	9.43%	4.82%	3.85%	4.69%	4.15%	5.42%	6%
(F) Information Technology	3.77%	8.43%	10.58%	5.47%	6.07%	2.30%	2%
(G) Wholesale and Retail (H)	9.43%	8.43%	9.62%	7.81%	8.95%	10.70%	5%
Finance and Insurance (I)	0%	0%	0%	0%	0%	9.70%	5%
Real Estate (J)	3.77%	3.61%	3.85%	0.78%	2.56%	11.60%	15%
Service (K)	1.89%	2.41%	2.88%	6.25%	3.19%	10.20%	10%
Media and Culture (L)	3.77%	2.41%	1.92%	2.34%	0.32%	3.30%	2%
Miscellaneous Industry (M)	18.87%	10.84%	11.54%	7.03%	8.31%	7.13%	8%

Data source from: CVSource.

As illustrated in the table 3-2, the M&As activities were conducted in most industries. Manufacturing industry ranks the first in the frequency of takeover, but with a downward tendency due to the rise of other industries' takeover. Power, Gas and Water Supply (D), Finance and Insurance (I), Real Estate (J), and Service (K) have achieved the fastest growth in M&As activities. Overall, the M&As activities in every industry are becoming more and more frequent, and their deal numbers and amounts have been increasing sharply in the last decade. The industry differences in the frequency of acquisitions is not very significant, which shows that M&As have penetrated in every industry in China.

3.1.1.4 Deal-and Firm-Characteristics of China's M&As

The deal-and-firm-characteristics of M&As in China are summarized as the following Table 3-3. These characteristics contain payment method of acquisition, acquisition type, target type, bidding matter (acquire asset or shares), connected transactions (Is there any connected interest between the target and acquirer), and cross-regional (whether acquirer and target are located in the same region). As shown in the table, over 70% of M&As deals in China were paid by cash, which is very high ratio compared to the developed countries like those in the US and Europe as theirs have more diversified non-cash payment. There is about a half of M&As deals conducted among horizontal business entities which aim at the expansion of economic scale. However, over a quarter of M&As transactions made in China intensified the conglomerate power in the market due to a lack of anti-trust laws in China then, which is an opposite tendency to the developed M&As market. Surprisingly, in terms of the target, the target is almost all private firms (98.7%), because the procedure of acquiring the private firms is less complex than that of public firms which required state approval. Another specific feature of China's M&As is that more than a half of transactions (59%) were taking place between the interest connected companies through

negotiation or agreement, which illustrate that the hostile M&As rarely happened in China.

Table 3-3 Deal-and firm-characteristics of M&As in China (2000-2007)

Characteristics	Type	Completed Deal Number	Percent
Payment method	cash	754	70.01%
	No-cash	323	29.99%
Acquisition Type	Horizontal	528	49.03%
	Vertical	97	9.01%
	Conglomerate	269	24.98%
	Undisclosed	183	16.99%
Target` type	List firm	14	1.30%
	Private firm	1063	98.70%
Bidding matter	Asset	377	35.00%
	Stock shares	700	65.00%
Connected transaction	Yes	636	59.05%
	No	226	20.98%
	Undisclosed	215	19.96%
Cross-regional	Yes	205	19.03%
	No	775	71.96%
	Undisclosed	97	9.01%
Total Completed Number		1077	

3.1.2 Specific Features of Chinese Corporate Governance

Corporate governance not only affects the mode of M&As transactions but also impacts the performance of post-acquisition entities. Various studies conducted on the issues of corporate governance, for example, Jensen and Meckling (1976), Fama (1980) and Fama and Jensen (1983) have invested the corporate governance based on the agent theory. Gompers, et al (2003) conclude that better corporate governance means higher firm valuation; Brown and Caylor (2006, 2009) identify that

better-governed U.S. firms achieved a higher return on equity (ROE), higher return on assets (ROA), and higher Tobin's Q; Dittmar and Mahrt-Smith (2007) prove that better corporate governance has substantial positive impact on U.S. firms' value. Therefore, in order to understand the China's M&As market, it is necessary to clarify the distinctive characteristics of China's corporate governance. China's corporate governance has experienced a vital development during the past three decades in company with Chinese economic reform. Prior to implementation of reforms and the opening up policy in 1978, it was a totally state-owned and centrally planned economy in China, in which all enterprises were owned by government or collective. Nowadays, most firms are partially or wholly privately owned (Neng Liang, 2010). This historic change has induced significant improvement in Chinese corporate governance.

Corporate governance practices in many countries have an evident tendency that is moving along towards developed countries' standards (often emulating Britain's 1992 Cadbury Code and the United States' 2003 Sarbanes–Oxley Act), but each country generally has its own specific practice (Neng Liang, 2010). Similarly, China has been no exception on perfecting its own system. There are four particularly notable characteristics in

China's corporate governance in 2000s:

3.1.2.1 Highly Concentrated Ownership

Company ownership is generally diversified in the US, UK and other developed countries, with public investors controlling the majority percent of share, while a relatively few large shareholders holding only a few percent of the shares in any given firm. However, in China ownership in listed firms is highly concentrated and controlled by a few majority shareholders. For example, among the 1,602 listed companies in August 2008, on average, the single largest owner owned 36% of shares, the top three controlled 49% and the biggest five held 52%. The concentrated ownership structure has not changed much since the exchanges were established. Thus, Chinese big shareholders have more power of control over companies than their western counterparts. Therefore, hostile M&As through a second board are rare in China.

3.1.2.2 Powerful State Ownership

Although the reform of Chinese state-owned enterprises continues, there is a high level of state ownership in most of the state-run listed companies (SOEs). In these companies, government agencies have powerful control and influence on their operation and management. According to the Shanghai Stock Exchange report,

State run companies contributed to about 31% of China's GDP in 2007, but the government agencies controlled 51% of its overall listed shares. Government officials overseeing the state's ownership stakes are not immune to political considerations; members of the Communist Party are often appointed to company boards, and Chinese regulations require that publicly listed companies provide 'necessary support' for the functioning of the Communist Party within their firms (Neng Liang, 2010). Thus, it required that M&As involving listed companies need the approval of the government.

3.1.2.3 Pyramid Ownership Structures

Most of the listed companies are owned and operated independently as fully financially responsible economic entities in developed markets like US, UK and Europe. By contrast, a considerable number of Chinese list firms are directly or indirectly controlled or owned by other companies and vice versa. Actually, these form a pyramid ownership structure, which induces a malfeasance of "tunneling" such that controlling firm extract resources from other firms in its pyramid whose minority shareholders interests may not be protected and could even be harmed. A study conducted by the Shanghai Stock Exchange in 2006 presented that such practices had become widespread: among

the 1,377 sample firms, 35% had misappropriated to their parent companies funds totaling RMB 48 billion. To tackle this problem, pyramid misappropriations was added into the criminal code in 2006. The pyramid structure of ownership provides a feasible explanation for more than a half of China's M&As activities carried out among the interested connected entities.

3.1.2.4 Weak Markets for Corporate Control

Prior to 2005, according to the regulations of the China Securities Regulatory Commission (CSRC), two-thirds of the shares were untradeable and should have been controlled by the companies themselves. Therefore, the issues about the competition for corporate control among companies and investors were virtually non-existent then. After the release of untraded shares to the open market in 2007, contests for corporate control became more feasible. However, even since then, the government agencies have still been major resistant stockholders (the blockholders) in many companies, which generally held a third, half or even more shares. Few of these newly 'tradable' shares were really traded without limitation. In the light of a CSRC study in 2008, 8 out of the 10 largest listed companies had less than 10% of actively traded shares, and the remaining 2 had fewer than a third of actively traded shares. As a result, most of M&As in China were completed via

negotiation, and also needed to get the approval of government. That is why there is rarely a hostile M&As transaction conducted in China. However, hostile bidding is the ultimate weapon for corporate control in developed countries.

3.1.3 Motives for M&As in China

In addition to the aforementioned existing motivation theory of M&As, including economies of scale and scope, synergy, efficiency, monopoly and behavioral theory, there are several distinctive features for the motivation of Chinese M&As due to its specific market environment. Following the studies of Deng (2004) and Buckley et al. (2008), they distinguished State-owned enterprises (SOEs) and Non-State-owned enterprises (Non-SOEs) when investigating their motivations for M&As, as Table 3-4.

Table 3-4 Motivations of SOEs and Non-SOEs for M&As

SOEs	**NON-SOEs**
Natural resource seeking	Strategic asset seeking
Increasing international competitiveness (Go global)	Access to new markets
Maintaining domestic leading position (Monopoly power)	Seeking technologies
	Diversification
	Seeking efficiency

Source: Deng (2004) and Buckley et al.(2008)

First of all, natural resource seeking is the one of most important motivations for Chinese SOEs M&As. Since to keep the high GDP growth rate and deal with its massive consumption of resources,

China needs to acquire natural resources from other countries, which are mainly realized by its SOEs M&As (Taylor, 2002). Through investigating the China's M&As from 1995 to 2007, Luedi (2008) concluded that the natural resources–seeking M&As account for the largest proportion in both the number of deals and amount. Deng (2007) also argues that to acquire strategic natural resources is the primary aim of SOEs' M&As.

Furthermore, obtaining strategic assets is another important motivation of M&As for Chinese enterprises. According to the definition by Amit & Schoemaker (1993), strategic assets refer to such resources and capabilities that are unique and valuable for a company, producing a formidable competitive advantage and yielding superior performance. As these assets are hard to create and imitate, M&As are regarded as the most effective way to obtain strategic assets (Homburg & Bucerius, 2005; Wesson, 2004). That is even more important for Chinese enterprises at the present stage, as they are followers in the global market and lack strategic assets.

Likewise, diversification is another key motive of M&A for Chinese enterprise. Diversification is interpreted as a method to mitigate the risk of non-system in mainstream financial theory (Treynor, 1961; Sharpe, 1964). Based on this point, many Chinese

enterprises diversified their products and markets through M&As to reduce financial and operational risks.

In addition, there are many other motives behind the wave of China's M&As. These motivations include market expansion, financial synergy, monopoly, tax saving and etc., which can be referred to in the above discussion on the motives theory of M&As and specific features of the Chinese market.

3.2 M&As ACTIVTIVES IN CHINESE REAL ESTATE INDUSTRY

3.2.1 Introduction of the Chinese Real Estate Market

The real estate industry in China is perhaps the fastest growing one in today's global property market. The real estate market in China has emerged since China adopted its reform and opening-up policy in 1978, before which properties were owned by government and were only distributed to the people for use as a kind of social welfare. From then on, the Chinese government has reformed its land and housing administration systems as an important part of an economic restructuring programme. In terms of the land administration, the market-oriented allocation system was introduced to replace State direct allocation and planning of land (Qu, Heerink, and Wang, 1995; Dowall, 1993; World Bank, 1993).

On the aspect of housing reform, urban housing was allocated to individuals as a welfare benefit by government that were subsequently converted into a commodity that could be tradable on the market freely (Chen, 1996; Wang and Murie, 1996; World Bank, 1992). After the past three decades' development, the real estate industry has grown up into a prosperous bushiness and a pillar industry in China. In 2003, The State Development Planning Commission (SDPC) declared that the planning urbanization rate of China would be over 50% by 2020. This unprecedented urbanization process, rapid economic growth as well as rising household incomes, made an expected strong market demand for the Chinese real estate industry. Actually, the real estate industry has been a consequence of China's rapid urbanization and an important constituent of the economy. By 2007, the real estate industry investment accounted for 10.25% of GDP, reaching $370 billion, and the sale income of land-using rights was over 60% of tax revenues in some local governments. However, high liquidity and overheating investments inflated asset prices in the Chinese real estate sector, raising concerns regarding an incipient asset bubble. To mitigate the bubble risk of the real estate sector, the government adopted various tightening measures to control its growth, including increasing reserve requirements, raising down-

payment (deposit) rates and restricting purchases of second and third houses. Under the pressure of the macro adjustment of the Chinese government, the real estate industry, which is still immature and disordered, is starting to restructure and consolidate. Therefore, a wave of M&As is sweeping the Chinese real estate industry. To clearly understand the characteristics of M&As in real estate, the features of the real estate industry in china is necessary to be explained as follows.

3.2.1.1 Features of China's Land Administration System

The transformation of land administration system since 1978 provides the essential foundation for the Chinese real estate industry development. Prior to the effect of Land Administration Law in 1986, land was owned by the state and collectives, and land transactions were absolutely prohibited. From then on, private entities and individuals were legally permitted to lease the state-owned land. It is the first time that land-use rights and land ownership were separable. That marked a new era of land policy in modern Chinese history and produced a profound impact on Chinese economic development. Especially, for the development of the real estate industry, the importance of this transformation of the land administration system can never be overstated (Ding, 2003).

I. Characteristics of the Land Use Rights System

China's Land Use Rights System (CLURS) is modeled upon the Hong Kong leasehold system (HKLS) (Chan, 1999). As Chan's report, the CLURS followed almost all of the characteristics of the HKLS except for the feature of ownership and terms of lease. The features of CLURS are summarized by (Liu L.M, 2007) as follows:

1. *The central government owns all land in the nationwide and is the sole source for granting land leases to developers and users. The land tenure in the territory is leasehold.*
2. *The grantees cannot obtain the permanent ownership (freehold) from the government.*
3. *The leases periods vary from forty years to seventy years.*
4. *The grantees need to pay the government a lump-sum premium plus a nominal annual ground rent for the lease.*
5. *The permitted land use, development controls and environmental protection provisions are written in the lease document.*

II. Land allocation and leasing policy

Land use rights are allowed to transfer, rent, and mortgage since 1991, when government issued "The Provisional Regulation on the Granting and Transferring of the Land Rights over State-owned Land in Cities and Towns". Since that time there are two sorts of

land transactions. The first one is called as the “first-grade” land market, which means that land users buy the land-use right directly from the municipal governments (representatives of the state) via auction, tender or negotiation (Ding, 2003). Another method is the transfer of land-use rights amongst the land users, which is also regarded as the “second-grade” land market. Actually, this type transaction accounts for the most of the land market in the real estate industry. That also became a motivation of M&As for real estate developers to acquire the land-use rights. As land is the most valuable resource for developers, therefore, to obtain the land-use rights from the second-grade land market is becoming one of their primary motivations for M&As.

In line with the “Real Estate Management Law” and “Land Management Law”, and regulations of the Ministry of Construction, there are seven basic types of land allocation and leasing (Liu, 2007).

1. *“Allocation of Land Use Right: That refers to the behavior of allotting land-use right to users by the government. Authorized by county level governments or higher-level government, land use right can be conveyed to users after relevant fees (such as compensation fee, relocation fees, etc.) are paid. It also refers to the behavior of allotting the land use right to the specific*

users (such as government agencies, public institutions, and state-owned enterprises) for free.

2. *Granting of Land Use Right: The State grants land use right to users for a specified term while land users pay the land use fees for the term.*
3. *Transferring of Land Use Right: it refers to the behavior which representatives of state-owned land transfer the land use right to land users.*
4. *Lease holding of Land Use Right: it means the State leases the land use right to users. Land users sign a one-year contract with a county-level government or higher-level government, and pay the rental fees.*
5. *Investment with Land: that implies that the State uses the assessed value of a specified term of land use right as an investment to new enterprises. The new enterprises obtain the land use rights which can be transferred, leased, or mortgaged. This way of transferring land use rights is primarily used by overseas-listed companies.*
6. *License Operation (Delegation of Land Use Rights): The state lets state-owned enterprises to manage a specified term of land use right.*
7. *Leasing of Land Use Right: it refers to the behavior when an*

administrator of state-owned land hires out land and their attachments to users, and then collects rent."

3.2.1.2 Current Status of Chinese Real Estate Market

As discussed above, China's real estate market has experienced an astonishing growth during the past three decades. Ke (2008) and Deloitte (2007-2011) reported that the real estate investment average increased 25% per year from 2000 to 2008, which accounts for 17% of total fixed asset investment. About 68% of total real estate investment goes to the residential property sector, 4.7% goes to the office buildings, and the remaining 27.3% goes to the retail, industrial and other land uses. Therefore, the residential market can be viewed as the principal market in the Chinese real estate industry. Different from other industries of China with much of foreign investment involved, the growth and expansion of the real estate industry are dominated by domestic investment with less than 3% of foreign investment (Ke, 2008, Deloitte, 2007-2011). In addition to a number of significant restrictions imposed on foreign investment in the Chinese real estate market, the combined effect of the regulatory restrictions, the global financial crisis and consequent adverse developments in the wider economy, precipitated a deterioration in the Chinese property market and a marked slowdown in foreign investment that have

probably contributed to the low foreign investment in the Chinese real estate industry (Ke, 2008, Deloitte, 2007-2011). As a result, It's not difficult to understand that the M&As in the Chinese real estate industry are also dominated by domestic M&As activities.

The real estate companies initially listed in China's stock market –Shanghai & Shenzhen stock exchanges, are from the coastal cities like Shenzhen, Shanghai and Guangzhou in the early 1990s. Subsequently, the stringent controls were exerted over the Initial Public Offerings (IPOs), and by 2012, there were 127 listed real estate/ property industry companies according to the CSRC classification. Beside the listed companies, there are large numbers of private real estate companies in China. According to the statistics of the Chinese Industrial and Commercial Administration Department, more than 50,000 real estate companies have been registered in China by 2005 (Ke, 2008). Unlike the highly concentrated real estate industries in developed countries and regions such as US, UK, Hong Kong and Singapore, the real estate industry in China is composed of a large number of small firms with average assets of US$20 million and revenues of US$30 million. (Newell, Chau, Wong, & McKinnell, 2005).

In contrast to the private real estate companies, as Nitin et al. (2009) reported that listed real estate companies are of larger size, more

profitable; lower gearing ratio and better operational performance. As the competition in the real estate market is becoming much fiercer, the process of restructuring and consolidation in the Chinese real estate industry would be accelerated.

3.2.2 Summary Description of M&As in the Chinese Real Estate Industry

China has witnessed sharply increased trend of M&As deals in the real estate industry in recent years, and domestic transactions have been continuing to dominate the M&As market. As mentioned above, these phenomena might be induced by the fierce competition within the Chinese real estate market and stringent control policies of government. The tendency of these adjustment measures to reduce the bubble risk of the real estate industry is gathering momentum. Also, there are no prospects for loosening the policies of regulation and control of the real estate market in China in the short term. But for the long-term, it is beneficial to build a healthy and prosperous real estate market and to strengthen the competitiveness of the real estate industry.

Because of the industry restructuring and consolidation induced by the implementation of the control policies, “the great fishes eat up the small ones” game was gradually played in the Chinese real

estate market and some small players were squeezed out of the game. The current situations of China's real estate market are summarized as the following (Zero2IPO Research Center, 2011; Deloitte, 2011):

3.2.2.1 Financing channels for developers were strictly tightened

For Chinese real estate enterprises, their financing channels include shareholders' investment, bank loan, house pre-sales revenue, initial public offering (IPO) or seasoned equity offering (SEO), trust loan, bond issuance, private equity (PE) investment fund, and so on. With the execution of the government's restrictive policies, these financing channels have been blocked gradually. For example, state commercial banks cut back the scale of the loans for the real estate sector, and gradually increased loan rates simultaneously; CSRC has been temporarily suspended to approve the real estate industry companies' IPO or back-door listing application; besides, new stock issuance, allotment of shares and bond issuance were also not permitted; and in fact real estate trust loans were controlled much more strictly than bank loans. Although the real estate PE funds from local and foreign capital sources were gathering volume, they were still too meagre to meet the huge demand of the real estate market. In short, all sorts of financing channels for real estate enterprises were tightened over

the past few years in China. As a result, many real estate enterprises had a high ratio of debt and their cash flow dropped significantly. Under this kind of situation, real estate developers which had weak capital strength and lack of financing channels were on the brink of being merged. By contrast, it was a good chance for the large-scale developers, such as Vanke, that had abundant cash flow and large volume land reserves, to expand. Therefore, large developers would take these fantastic opportunities to expand their business scale and build their land banks through acquiring smaller developers via M&As.

3.2.2.2 M&As deals in the real estate industry increased sharply

The Chinese real estate industry had witnessed M&As activities booming in the past few years. According to records of Zdatabase produced by Zero2IPO Research Center, both of the numbers and volume of M&As transactions have increased sharply since 2006 as shown in Fig 3-3 and Table 3-5. Especially, the real estate industry market had continued its strong momentum of 2010 and witnessed a sharply increasing trend of M&As in the first half of year 2011. Data released by Zdatabase revealed that the M&As deals closed in the real estate industry outperformed other industries in the first two quarters of 2011 and the real estate industry has always been among the most brisk industries involved

in M&As in the past five years.

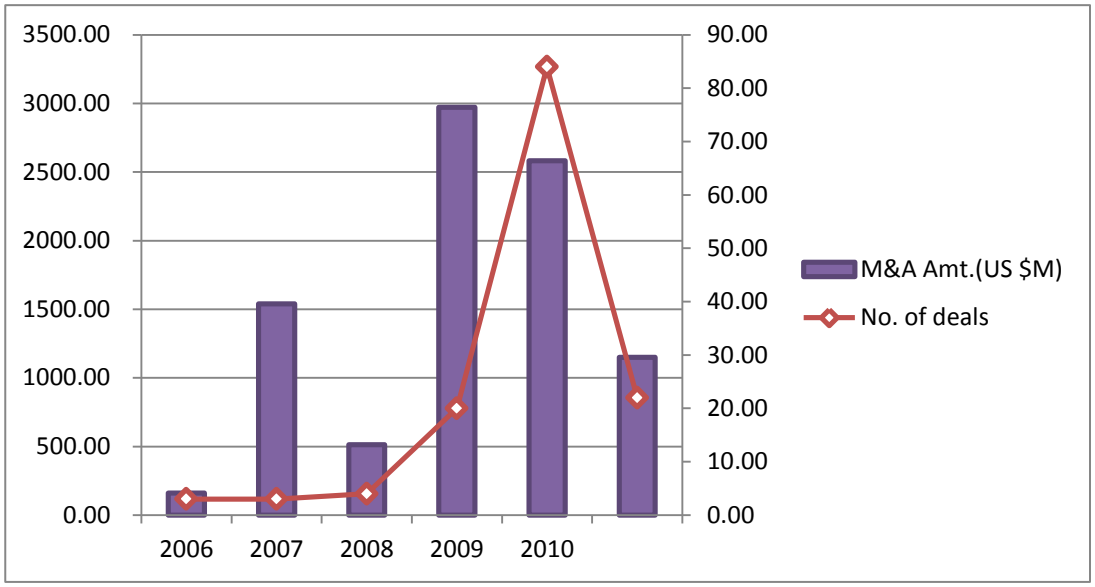

Figure 3-3 Summary of Chinese real estate M&As deals from 2006 to 2011 (Jan to Feb)

Table 3-5 Summary of Chinese real estate M&As deals from 2006 to 2011 (Jan to Feb)

Year	No. of deals	No. of deals (disclosed)	M&As Amt.(US $M)	Average M&As Amt. (US $M)
2006	3.00	3.00	160.28	53.43
2007	3.00	3.00	1540.42	513.47
2008	4.00	2.00	512.00	256.00
2009	20.00	20.00	2971.80	148.59
2010	84.00	75.00	2582.44	34.43
2011(Jan-Feb)	22.00	22.00	1149.87	52.27
Total	136.00	125.00	8916.81	71.33

3.2.3 Motives for M&As by Chinese Developers

Despite being triggered by government macroeconomic regulatory policies, there are many other economic motivations behind the wave of Chinese real estate industry M&As. As discussed above in the situations of the real estate sector, there are two main drivers for Chinese real estate M&As, including economic scale expansion,

land acquisition and financing channel access. Under these motivations, the following types of M&As were found in the Chinese real estate industry.

1. Small developers partnering with a big one.

Due to the restriction of financing channel by government, many of small developers can hardly raise enough capital to satisfy their requirement of normal operation even though owned some of land bank. Furthermore, coupled with tightening of national land macro control policy to deal with hoarding land phenomenon, it puts much more pressure on small developers. Under this kind of situation, those developers that have land but lack of capital to develop are willing to partner with big developer with strong financing strength by relinquishing or transferring their projects.

2. Big developers acquire smaller ones.

Big developers are not affected too much by the governments macro-control polices because they have strong capital strength, a wide array of financing channels, large-scale of land bank and well-established managerial techniques. By contrast, it creates great opportunities for big developers to expand their business scale. They could seize the opportunity to merge the small developers and their projects to obtain land bank. It's the best way for developers to realize the explosive growth in economic scale.

3. Industry consolidation.

It's an irresistible tendency for real estate industry to become more concentrated. Since there are large numbers of small size developers and a low concentration of the real estate market, it is hard for the smaller ones to achieve economic scale efficiency in the current situation. As the increasing requirement for financing capability and managerial ability, small size real estate developers will find that they experience more difficulties to sustain their competitiveness or even to survive. Therefore, the integration and consolidation for Chinese real estate is inevitable. And the M&As will further accelerate the process of the Chinese real estate industry's consolidation.

4. Opportunities for foreign capital.

Despite the Chinese government restrictions on foreign investment in the real estate industry, it still provides some chances for mergers in the real estate market for the foreign real estate developers, provided they have enough capital, favorable financing channels, good quality of service and well-established managerial savvy in this wave of consolidation of real estate industry. Actually, M&As is a very good entry mode for the foreign participants into the Chinese real estate market and helps them penetrate the industry quickly.

3.2.4 Overview of M&As Methods for Chinese Developers

The commonly used acquisition methods in Chinese real estate market consist of: (1) acquiring the real property assets; or (2) purchasing the shares of the listed Chinese real estate companies or their overseas intermediate holding company. The features of these two acquisition methods, as well as the various relevant factors needing to be taken into account, are described in the following:

3.2.4.1 Share acquisition

The acquirer obtains the control right of the target via purchasing shares of it. Therefore, the target will continue to operate after share acquisition. Its licenses, commercial contracts and employment contract will almost remain the same, which aim to minimize the detrimental effect to the business operation and to eliminate extra cost that might be associated with the asset acquisition. However, at the same time the acquirer will indirectly inherit the debt of the target which was incurred prior to the acquisition.

In term of tax charges for the target, these will continue and will not be impacted by the change of target's ownership structure. At present, according to Chinese tax law, it does not prohibit the utilization of tax losses following ownership changes. But the

ownership change in a Chinese listed company still needs government approvals. The approval procedure can be avoided if acquirers *indirectly* control a target via purchasing shares of its overseas intermediate holding company.

3.2.4.2 Asset acquisition

In line with the share acquisition, the features of asset acquisition in China are also summarized as follows:

To the extent not assignable, most of a target's business contracts, licenses and employment contracts must be renegotiated and re-signed by the acquirers. This process could interrupt normal business operations. Generally, the acquirer will not inherit any debts of the target other than debt specifically discussed within the agreement. In an asset acquisition, by contrast, the acquirers are allowed to 'cherry pick' their wanted assets. For an asset acquisition, especially a real estate acquisition, sellers are generally required to pay a much higher tax to the government in China, which could potentially affect the transaction price. However, unlike the share acquisition, no tax credit for the target will be transferred to the acquirer in the asset acquisition. Similarly, the asset acquisition also requires obtaining numerous government approvals, even much more than for share acquisition. The approval procedure will last for a long period like several months

or even longer, which might cause serious delays of the M&As transaction.

CHAPTER 4. RESEARCH METHOD AND DESIGN

This study attempts to investigate the issues of M&As within the context of the real estate industry, so it is necessary to adopt the research methodology under the combination of the conventional methods in M&As arena with the means in real estate industry research paradigms. This research project has the dual mission of simultaneously seeking solutions for practical problems and creating theoretical and conceptual knowledge. To service the mission well, appropriate research approaches and framework need to be designed elaborately. The research methodology and framework will be described in detail in the next section.

This study adopts quantitative approaches to measure the performance of post-merger of Chinese real estate companies and identify its relationship with the deal and firm’s characteristics, and motivations of M&As. Also, qualitative methods are used in the study for explaining some aspects of M&As within the context of real estate industry firms, which is because the study intends to identify the specific events relating to Chinese real estate firms' M&As, and their impact upon the performance through the collection of textual data. On account of each M&As deal is unique,

the study does not intend to develop a theory of the events (grounded theory).

In order to accomplish the research goals, which aim to measure the performance of post-merger of Chinese real estate companies and identify its relationship with the deal and firm's characteristics, and motivations of M&As, the study is divided into 5 research stages. The research framework of this study comprising content of task and relevant research methodologies in each stage are shown as Fig.4-1. In addition, to achieve the aim of this research, the following methodology issues will also be detailed in this section: data and sample, definition of variables for motives, definition of variables for performance evaluation, definition of other control variables, statistical methods and analysis.

4.1 RESEACH FRAMEWORK OF THIS STUDY

To achieve the aim of the study, the research is carried out through 5 stages, each of which is needed to fulfill some sub-targets under the overall objective of the study. The task, target and research approaches of each stage together comprise the research framework of the study shown as figure 4-1. The research methods

adopted in this study including literature review, statistical analysis (such as description analysis, regression analysis etc.), and case study. Two or more methods, either qualitative or quantitative, may be combined to achieve a certain objective in each stage. The detail content of each research stage is described as the following.

Stage 1: the M&As phenomenon in real estate industry are described in this stage through extensive literature review and document analysis, which is the content of chapter 3. According to the Thomson's report, the growth of consolidation process swept across almost all industry sectors, and obviously, the number and the value of M&As transactions are substantial in all sectors (Thomson Financial 2007). The M&As activities in the real estate industry have also taken a great leap in recent decades. However, most of the research on M&As are concentrated on the financial, materials and energy power industries, there are only a limited number of previous studies are conducted to investigate the M&As phenomenon in the real estate industry, especially in the Chinese context. Therefore, this stage will provide an overall understanding of the M&As activities taken place in the Chinese real estate industry. That will serve as important background for the study.

Stage 2: This stage will analyze the potential motivations for real estate industry firm participating M&As deals based on the

motivation theories of M&As. And then, some issues will be raised on two grounds: firstly how about the post-acquisition performance of real estate developers, and how to measure it. Secondly, what is the potential relationship between the motives and the performance of M&As deals under the context of real estate industry. The analysis of possible motives will be driven from the systematic literature review of the existing theories in M&As domain and the characteristics of real estate industry identified in stage 1. Another important task in this stage is to describe the definition of the post-acquisition performance and the commonly used evaluation methods of them. The cutting-edge methods of evaluation will be adopted in the study, which will be stated in the following section. In a word, the stage is setting the overall theory foundation for the study.

Stage 3: The quantitative methods such as data envelope analysis (DEA) and statistical analyses are adopted in this stage to solve the problems proposed in stage 2. The data will be collected firstly in this stage according to the requirements of the investigation. The data collection method will be stated in the following section of this chapter. The quantitative analysis mainly contains statistical analysis and econometric methods. A descriptive statistical analysis will be presented firstly, which will detail the distribution

characteristics of data and the theory explanations behind them. Then, the performance of post-acquisition of Chinese real estate developers were evaluated through two methods, say event study and DEA. After that, a comparison was made between the results measured by these two methods. The last part of this stage is to check the possible relationship between motives & deal characteristics and the performance through the econometric methods like regression.

Stage 4: It will provide the theory explanation for the result of empirical study in the stage 3. The understanding behind the data will be presented under the context of combing the feature of real estate industry with established theory of M&As. The specific motives for real estate firms to conduct M&As deals will be concluded. The key performance indicators, which have a profound effect on the post-merger performance, will also be summarized in the stage. Lastly, some recommendations shall be given as reference for enhancing the performance of future M&As deals taken place in the real estate industry. Undisputedly, it is valuable to analyze the empirical study thoroughly and extract knowledge or ideas from experience as a complement to the theory as well as observe practical application of M&As transactions in the real estate industry.

Stage 5: Based upon the above mentioned research work, a series of research results are summarized in this section. And then, some guidance will be developed for supporting the decision-making of M&As especially for real estate industry developers.

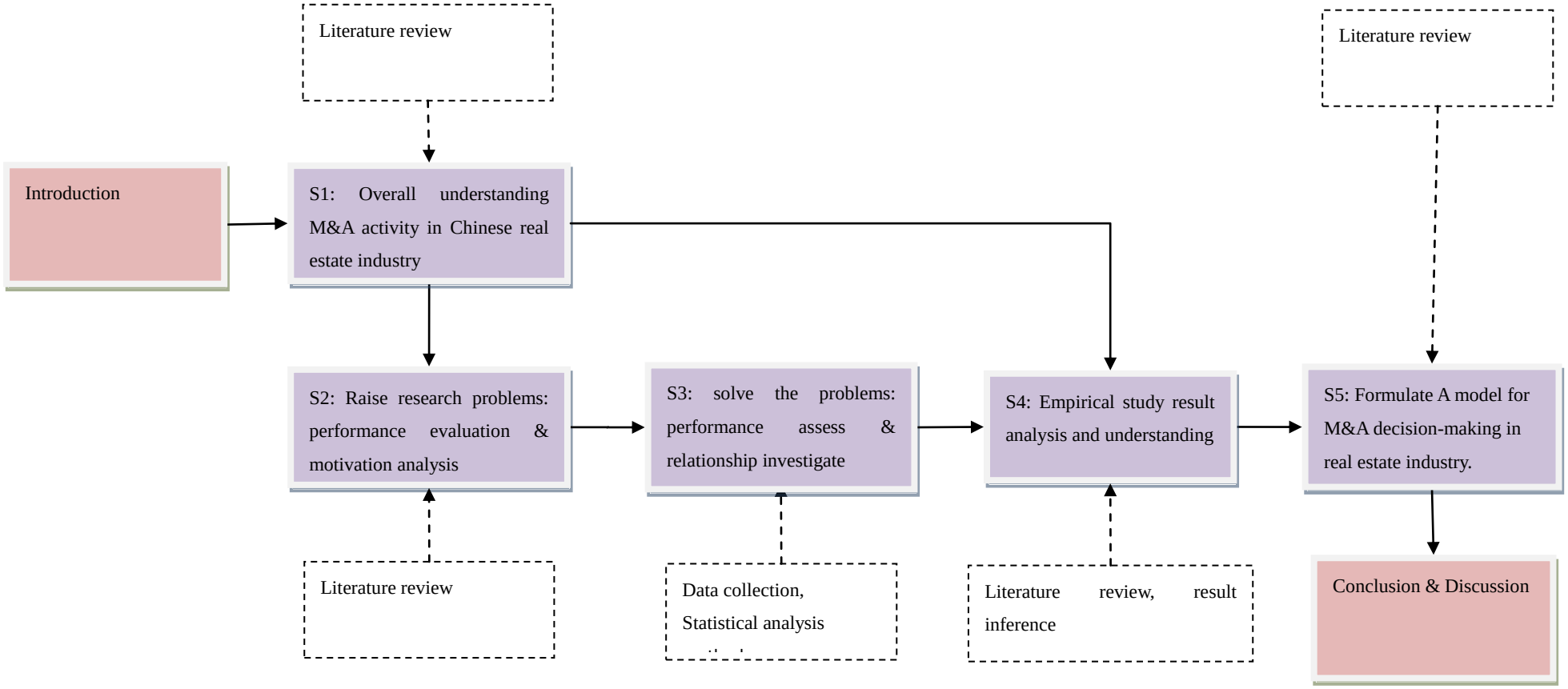

Figure 4-1 The Research Framework of the study

4.2 DATA AND SAMPLE

To conduct the M&Ass study, the most important thing is to make sure that M&As deals' information are available and their data are easy to collect. Generally, M&As deals information can be collected by Thomson Financial Securities Data's SDC--Worldwide Mergers & Acquisitions Database, and Bloomberg database. For the Chinese real estate industry, specially, its M&As deal information can be gathered through (1) China Real Estate Industry Research Database, (2) China-listed Firm's Merger & Acquisition Dataset, (3) China-Listed Firm's Asset Restructuring Research Database, constructed by Shenzhen GTA Information Technology Company Limited. These three databases contain detailed information on all M&As deals completed from 1986 to 2011. Their accounting data are collected from the China Stock Market Accounting Research (CSMAR) database, which is also known as the Chinese CRSP (The Center for Research in Security Prices) and Compustat (a database of financial, statistical and market information on active and inactive global companies throughout the world) database.

Since the study focuses on the M&As activities of real estate industry firms, however, without a special definition of the "real

estate industry", the term is too broad to serve the research target. The term of "real estate industry" generally refers to a broad type of activities including those from the market investigation, product design, financing, construction, marketing, property sale, to maintenance and property intermediary service etc. It is not easy to master all of these types of business simultaneously, and even it will make the analysis and conclusion with little meaning for each of them. Therefore, it is necessary to redefine the term of "real estate industry" for narrowing the scope of research. In order to avoid confusion, for the purposes of this study, it shall use a limited sense of the conventional real estate industry, namely, that which follows the industry classification of the China Securities Regulatory Commission (CSRC) for the definition of real estate industry (Code J). Since the study focuses on the M&As deals conducted by real estate companies, the selection of samples should meet criteria like the following. First of all, as mentioned above, the acquirers should come from the real estate industry (code J), while the industry code of target have no such limitation, say target could come from either real estate industry or other industries. That is because the object of study is real estate companies as acquirer in M&As deals. And then, in line with M&As theories, an M&As deal completed where there must be a

transfer of ownership between acquirers and targets. Hence, M&As deals which are pending, terminated, or non-binding, and acquisition of minority interests will be excluded from the sample in this study. Furthermore, to obtain up-to-date trend of the M&As activities in real estate industry, the data range of M&As will consist of all completed transactions from 2000 to the present. The reason for this criterion is that the business environments for real estate industry have experienced huge changes and the M&As transactions in the Chinese real estate industry began to become active since 2000. The next consideration is the deal value. Since M&As deal with small volume of value has limitation effect on the involved entities or even less on the industry. These kinds of small-scale M&As transaction can be completed within the manager's intuitive and experience judgment. However, it is a totally different story to involve firms when the deal's value is increasing. Regarding this point, the value of M&As transactions will be set to higher than 50 million Chinese Yuan in this study. Last of all, the accessibility of data is another important filter for the sample selection to this study. Although the above-mentioned three databases contain some basic information of each of M&As deals, there is much information still need to be replenished by other resources for achieving the research aim of the study. Hence,

the sample will be limited to developers that were publicly listed before M&As transactions were announced as their operation and financial data are public according to information disclosure requirement of listed companies in China. The publicly listed developers' stock price data and the financial statement data can be obtained from CSMAR which is a Chinese standardized database delivering fundamental and market data similar with famous CRSP and Compustat database. Through the above discussed criteria, the identified sizes of sample are illustrated as table 4.1. As shown in the table 4.1, when we only adopt the industry classification of the real estate industry (code J), the number of listed real estate companies are 127 up to 2012. There are 56 listed companies that had conducted M&Ass with deal status limited to complete and under no condition. Then, when adding the condition of deal value, which set to more than 50 million Chinese Yuan, the sample size decreased dramatically to 45. There are 35 deals from the total 45 identified sample are taken place in the date range from 1/1/2000 to 1/1/2010, which illustrated the leap of M&As activities in the real estate industry especially in recent decade. Finally, after checking data accessibility via the database CSMAR, the sample size of the study arrived at a determinate number of 32.

Table 4-1 Sample Selection Result

Selecting criteria	Size of sample
"Industry code J : real estate industry" (listed)	127
+ "Deal Status : Complete, Under no condition"	56
+ "Deal Value (RMB Mil): 50 to Higher"	45
+ "Date Announced: 1/1/2000 to 1/1/2010"	35
+ "Data Accessibility: CSMAR"	32

4.3 RESEARCH METHODOLOGY

The classical event study method, namely, Buy-and-hold abnormal return (BHAR) method, are used to measure the long-term post-acquisition performance of acquirers firstly in this study. As discussed in the literature review, there are still no perfectly appropriate methods to measure the long-term performance of M&As, so does the event study. To avoid the defects of the event study, the study simultaneously applies a DEA based Malmquist Productivity Index to analyze the effect of M&As on the performance of acquirers. A comparative analysis is carried out to distinguish the difference of performance measurement result between the event study and DEA method subsequently. These methods adopted in this study are introduced as following:

4.3.1 Event Study

As has discussed in chapter 2, event study as a classic method for measuring the performance of M&As is also suitable for this research. For the aim of investigating the long-term performance of acquirers, the buy-and-hold abnormal returns (BHAR) approach, also called characteristic–based matching approach, is applied in this study. The post-acquisition performance of three years after the effective date of a completed deal is measured as a long-term performance in the study, similar to Mitchell and Stafford (2000).

To evaluate the long-term post-acquisition performance of acquiring firm, the standard BHAR methodology as introduced by Barber and Lyon (1997) are adopted firstly. The theoretical detail of the BHAR methodology is explained in the literature review in chapter 2. The expected return of the acquirer is calculated through such two matching methods as reference portfolio returns and control firm returns. The former generally refer to market index return or industry index return, while the latter commonly use control firms based on matching size and book-to-market ratio. The result of BHAR method with reference portfolio suffer ill effect of new listing bias, a skewness bias, and rebalancing bias (Barber and Lyon, 1997), therefore, Lyon et al.'s (1999) method is used to analyze skewness bias when evaluate the BHAR with

reference portfolio. The control firm method can mitigate the new list bias as both the sample and control firms must be listed in the event time, the rebalancing bias due to the return of both sample and control firms are measured without rebalancing, and the skewness bias since sample and control firms obtained similarly positive returns. Therefore, the above two matching methods for measuring the expected return of sample are used for calculating the BHAR in this study. Three benchmarks are set up as follows:

Reference portfolio approach (Benchmark 1): Shanghai & Shenzhen exchange index return.

Reference portfolio approach (Benchmark 2): Chinese real estate industry index return.

Control firm approach (Benchmark 3): this benchmark consists of a portfolio of three matching firms selected on the basis of size and book-to-market ratio. The matching firms are selected through two steps. In the first step, the listed real estate firms that have not made any M&As during from 2000 to 2010 were identified. Then the next step is to pair each acquiring firm with three control firms according to equivalent size and book-to-market ratio (Loughran and Vijh, 1997). The benchmark return in control firm approach is equal to average return of the selected three control firms. Obviously, it can be regarded that benchmark three is the best one

among all three methods as it reducing the biases of new listing, rebalancing and skewness.

4.3.2 DEA Method

DEA was established by Charnes et al (1978) based on the work of Farrell (1957), and is a powerful methodology for assessing the relative efficiencies of multi-input and multi-output production units. The major advantages of DEA over other methods, such as cost-benefit analysis or regression analysis, are that there is no need to select a particular functional form, establish a distributional assumption or set up the relative weights of the variables. It has good statistical characteristics and is a very convenient method for detecting efficiency and productivity changes of individual organisations (Charnes et al, 1978; Cooper, et al, 2007a, b), which makes it very suitable for evaluating and comparing the performance of developer M&As.

The Malmquist (1953) index was first developed to analyse productivity (Caves et al., 1982). Since then, many studies have used the Malmquist index to evaluate the TFP change for a particular organization over a fixed period, although it could be applied in other areas equally well (Färe et al 1994a, b; Cooper et al, 2007b; Kortelainen, 2008). Malmquist indexes have several

desirable features and properties that are lacking in other indices: there is no need to make behavioral assumptions such as cost minimization or profit maximization, which makes them useful when the producer's objectives differ, or are unknown or are unachieved; there is no need to provide price information, which make them practicable when either prices do not exist, are distorted or have little economic meaning; and they can be easily calculated by the DEA methodology (Caves et al, 1982; Färe et al, 1995). This makes a DEA-based Malmquist TFP Index suitable for evaluating M&As induced performance changes.

4.3.2.1 The DEA efficiency estimation

DEA was originally established by Charnes, Cooper, and Rhodes (1978) based on the work of Farrell (1957). DEA is an essential modern frontier efficiency analysis for efficiency estimation which detects "best practice" efficient frontiers existing in leading companies in an industry. The efficiency of each firm is evaluated by comparing with the industry frontiers. Therefore, the efficient value range from 0 to 1, while 1 is regarded as the most efficient firm in an industry. Using DEA to estimate the efficient frontiers is based on its following advantages: 1) It has no need to select a particular functional form and to establish a distributional

assumption; 2) As the DEA method is individual firm based, it is very convenient to detect the efficiency and productivity changes of each firm. Hence, DEA is very suitable to be used for measuring the efficiency changes induced by M&As; 3) Since the Malmquist methodology used for productivity measurement is based on the DEA method, it is convenient to measure efficiency and productivity simultaneously by adopting the DEA method. Also, the Malmquist method can be used to measure the productivity change of acquirer after making M&As; 4) DEA has good statistical characteristics. Banker (1993) proves that DEA and maximum likelihood estimation is in effect the same thing; and estimators of DEA are consistent and converge faster than that of other frontier estimation methods (Kneip et al., 1998; Grosskopf, 1996). The general information of these two methods is summarized as following for providing a background to the study.

DEA is concerned with evaluation of efficiency which comprises overall efficiency, technical efficiency, pure technical, allocative, scale, cost and revenue efficiency (cooper et al. 2007). Overall productive efficiency measures the success of an organization in maximizing its output generation from the available resources. It consists of allocative and technical efficiency. Allocative efficiency refers to the organization's ability to choose an optimal proportion

of combination of inputs and outputs under constraint of market price and the behavioral goals of the organization. Technical efficiency measures the ability of the organization to produce as much output as possible in a given set of inputs, which can be divided into pure technical and scale efficiency. Pure technical efficiency evaluates how well of organization in adopting the "best practice" technology, while the scale efficiency evaluates how well of organization in realizing constant returns to scale. Cost and revenue efficiency refer to the organization's ability in minimizing costs and maximizing revenues. There are two alternative methods in DEA to figure out the efficient frontier, namely, input-oriented and out-oriented. In the standard economic-application of DEA, to make sense from the point of economic theory, input-oriented method implies a cost minimization model and the out-oriented method implies a revenue maximization model.

Technical efficiency is measured by using the input-oriented model (Shepherd, 1970). Assume Decision Making Unit (DMU) i uses M inputs x_i^t to generate N outputs y_i^t in period t. The production technology of period t can be modeled by an input function. For any $y^t \epsilon \mathbb{R}_+^N$, $V_r^t(y^t)$ denotes the subset of all input vectors $x^t \epsilon \mathbb{R}_+^M$ which yield at least y^t, using a production technology characterized by returns to scale of type r, where r = v = constant

returns to scale (CRS), r = v = variable returns to scale (VRS), and r = n = non-increasing returns to scale (NIRS). The input-oriented distance function is

$$D_r^t(x_i^s, y_i^s) = \sup\left\{\theta_i^s : \left(\frac{x_i^s}{\theta_i^s}, y_i^s\right) \epsilon\, V_r^t(y_i^s)\right\}$$

$$= (\inf\{\theta_i^s : (\theta_i^s x_i^s, y_i^s)\})^{-1} \qquad (1)$$

Where (x_i^s, y_i^s) is the input & output vector for DMU i in period s. The input–output vector does not have to come from the same time period as the reference technology. In DEA estimation s = t ; but in Malmquist analysis, letting s and t represent different time periods permits the measurement of productivity changes over time.

When s = t, the function (1) is the reciprocal of the minimum equi-proportional contraction of the input vector x_i^t, given outputs y_i^t, i.e., Farrell's (1957) radial measure of input technical efficiency. Technical efficiency $TE_r^t(x_i^t, y_i^t)$ is thus defined as $TE_r^t(x_i^t, y_i^t) = 1/D_r^t(x_i^t, y_i^t)$. CRS technical efficiency is measured for each DMU by solving a linear programming problem:

$$\left(D_c^t(x_i^s, y_i^s)\right)^{-1} = TE_c^t(x_i^t, y_i^t) = \min \theta_i^t ,$$

Subject to: $Y^t \lambda_i^t \geq y_i^t$,

$X^t\lambda_i^t \leq \theta_i^t x_i^t$,

$\lambda_i^t \geq 0$,

(2)

where X^t is a $M \times I$ input matrix and Y^t an $N \times I$ output matrix for all DMUs, x_i^t is a $M \times 1$ input vector and y_i^t is an $N \times 1$ output vector of DMU i, λ_i^t is an $I \times 1$ intensity vector, and I = the number of DMUs in the sample (i = 1,2,. . . , I). This estimation (with the λ_i^t only constrained to be non-negative) generates a CRS frontier.

Technical efficiency can be divided into pure technical efficiency and scale efficiency, like $TE_c^t(x_i^t, y_i^t) = TE_v^t(x_i^t, y_i^t)SE^t(x_i^t, y_i^t)$. $TE_v^t(x_i^t, y_i^t) =$ pure technical efficiency (technical efficiency relative to a VRS frontier), and $SE^t(x_i^t, y_i^t) =$ scale efficiency. Pure technical and scale efficiency are separated by solving (2) with the additional constraint: $\sum_{i=1}^{I} \lambda_i^t = 1$ for a VRS frontier, and with the constraint $\sum_{i=1}^{I} \lambda_i^t \leq 1$ for a NIRS frontier. Pure technical efficiency (TE_v^t) is the solution to the VRS problem, and scale efficiency is then obtained by $SE^t(x_i^t, y_i^t) = TE_c^t(x_i^t, y_i^t)/TE_v^t(x_i^t, y_i^t)$. If $SE^t(x_i^t, y_i^t) = 1$, CRS are. If $SE^t(x_i^t, y_i^t) \neq 1$ and NIRS efficiency= TE_v^t, DRS are indicated; if $SE^t(x_i^t, y_i^t) \neq 1$ and NIRS efficiency $\neq TE_v^t$ then IRS are

present.

Cost efficiency can be estimated via a two-step procedure. For DMU i, suppose w_i^t represent the input price vector. Then:

$$\text{Min} x_{mi}^t \ \sum_{m=1}^{M} w_{mi}^t x_{mi}^t$$

Subject to : $Y^t \lambda_i^t \geq y_i^t$,

$X^t \lambda_i^t \leq \theta_i^t x_i^t$,

$\lambda_i^t \geq 0$

(3)

Through the linear programming problem, Cost efficiency is yielded relative to a CRS frontier. First, the cost minimizing input vector x_i^{t*} for the input price vector w_i^t and the output vector y_i^t can be calculated via solving (3) . Second, CRS cost efficiency for DMU i can be attained by calculating the ratio $CE_c^t(x_i^t, y_i^t) = \left(w_i^{tT} x_i^{t*}\right)/\left(w_i^{tT} x_i^t\right)$, where T denotes vector transpose. The measure of cost efficiency, $0 < CE_c^t(x_i^t, y_i^t) \leq 1$, is the proportion by which the DMU could multiply its costs and still produce no less of any output. Then, CRS allocative efficiency can be obtained from the relationship:

$$CE_c^t(x_i^t, y_i^t) = AE_c^t(x_i^t, y_i^t) TE_c^t(x_i^t, y_i^t)$$

Solving (3) for each DMU produce a CRS cost frontier. CRS

efficiency is the ultimate benchmark because it implies that a DMU has achieved pure technical efficiency, optimal scale, and allocative efficiency.

Revenue efficiency can be calculated similarly to cost efficiency by adopting an output-oriented approach to maximize revenues. The mathematical programming problem is stated as following:

$$\text{Min} y_{ji}^{t} \ \sum_{j=1}^{N} p_{ji}^{t} y_{ji}^{t}$$

$$\text{Subject to : } Y^{t}\lambda_{i}^{t} \geq y_{i}^{t} ,$$

$$X^{t}\lambda_{i}^{t} \leq \theta_{i}^{t}x_{i}^{t} ,$$

$$\lambda_{i}^{t} \geq 0$$

(4)

The revenue-maximizing output vector y_{i}^{t*} for the output price vector p_{i}^{t} and the input vector x_{i}^{t} is obtained by solving the Linear programming (4). Revenue efficiency is then estimated by the ratio $0 < k_{i}^{t} = p_{i}^{tT}y_{i}^{t}/p_{i}^{tT}y_{i}^{t*} \leq 1$.

4.3.2.2 DEA-Based Malmquist analysis for productivity

The Malmquist index approach is adopted to measure the total factor productivity (TFP) change of DMUs over time in this study. The change of TFP is induced by two primary aspects, namely, technical change and technical efficiency change. Productivity

change can be estimate by several methods, such as the Fisher index, the Törnqvist index etc. Compared with other methods, The Malmquist index has its unique advantages, which include that it separate technical change from efficiency change and can be measured by the DEA methodology.

The description below draws primarily upon the work of Fare et al (1994) and recaps some of the discussion from Coelli et al (2005). As mentioned above, the Malmquist TFP index evaluates the TFP change between two periods like s and t by computing the ratio of the distances of each period relative to a common technology. If taking period s technology as the reference technology, the Malmquist (output-orientated) TFP change index between period s (the start period) and period t can be calculated by:

$$M_0^s(x_s, y_s, x_t, y_t) = \frac{D_0^s(x_t, y_t)}{D_0^s(x_s, y_s)} \tag{5}$$

The distance function $D_0^s(x_s, y_s) = \inf\{\emptyset: (x^s, y^s/\emptyset) \in S^s\}$ is defined as reciprocal of the "maximum" proportional expansion of the output vector ys in given inputs xs. The function $S^s = \{(x^s, y^s): x^s \text{ can produce } y^s\}$ is the production technology models, which transform of inputs vectors $x^s \epsilon \mathbb{R}_+^M$, into outputs

vectors $y^s \epsilon \mathbb{R}_+^N$. In particular, note that $D_0^s(x_s, y_s) \leq 1$ if and only if $(x^s, y^s) \in S^s$. In addition, $D_0^s(x_s, y_s) = 1$ if and only if(x_s, y_s) is on the boundary or frontier of technology. Similarly, the distance function $D_0^s(x_t, y_t) = \inf\{\emptyset: (x^t, y^t/\emptyset) \in S^s\}$ represents the distance from period t to the period s technology. It measures the maximal proportional change in outputs required to make (x^t, y^t) feasible in relation to the technology at period s. If the value of M0 is larger than one, it means that the TFP growth from period s to period t, or else it indicates the TFP decline.

Alternatively, if using period t technology as the reference technology, the Malmquist TFP change index can be computed by:

$$M_0^t(x_s, y_s, x_t, y_t) = \frac{D_0^t(x_t, y_t)}{D_0^t(x_s, y_s)} \tag{6}$$

These two indices are only equivalent when the technology is Hicks output neutral , which means that output distance functions can be represented as $D_0^t(x_t, y_t) = A(t)D_o(x_t, y_t)$ for all period t (Fare et al, 1998). To avoid the necessity to either impose this restriction or to arbitrarily choose one of the two technologies, the Malmquist TFP index is often defined as the geometric mean of these two indices, in the spirit of Fisher (1922) and Caves, Christensen and Diewert (1982). That is,

$$M_0(x_s, y_s, x_t, y_t) = \left[\frac{D_0^s(x_t,y_t)}{D_0^s(x_s,y_s)} \times \frac{D_0^t(x_t,y_t)}{D_0^t(x_s,y_s)}\right]^{1/2}$$

(7)

Through rearranging this TFP index distance function, it can be decomposed into the product of the technical change index and the technical efficiency change index as：

$$M_0(x_s, y_s, x_t, y_t) = \frac{D_0^t(x_t, y_t)}{D_0^s(x_s, y_s)}\left[\frac{D_0^s(x_t, y_t)}{D_0^t(x_t, y_t)} \times \frac{D_0^s(x_s, y_s)}{D_0^t(x_s, y_s)}\right]^{1/2}$$

(8)

In this equation, the ratio outside the square brackets is actually the efficiency change, which evaluates the change in the output-oriented measure of Farrell technical efficiency between periods s and t.

$$\text{Efficiency change} = \frac{D_0^t(x_t, y_t)}{D_0^s(x_s, y_s)}$$

(9)

The remaining part in the equation 8 is the technical change, which measures the geometric mean of the shift in technology between the two periods Xt and Xs.

$$\text{Technology change} = \left[\frac{D_0^s(x_t, y_t)}{D_0^t(x_t, y_t)} \times \frac{D_0^s(x_s, y_s)}{D_0^t(x_s, y_s)}\right]^{1/2}$$

(10)

There are many others possible decompositions of the technical efficiency change and technical change components proposed by other authors, which have been discussed effectively in the Fare et al (1998) survey paper. Such as Fare and Grosskopf (1996) decomposed the technical change component into input bias, output bias and "magnitude" components, and Fare et al (1994b) decomposed technical efficiency change into scale efficiency change and "pure" technical efficiency change.

In the decomposition of Fare et al (1994b), the pure efficiency change is defined as:

$$\text{Pure efficiency change} = \frac{D^{t}_{0v}(x_t, y_t)}{D^{s}_{0v}(x_s, y_s)} \tag{11}$$

And, the scale efficiency change is written as:

$$\text{Scale efficiency change} = \left[\frac{D^{t}_{0v}(x_t, y_t)/D^{t}_{0c}(x_t, y_t)}{D^{t}_{0v}(x_s, y_s)/D^{t}_{0c}(x_s, y_s)} \times \frac{D^{s}_{0v}(x_t, y_t)/D^{s}_{0c}(x_t, y_t)}{D^{s}_{0v}(x_s, y_s)/D^{s}_{0c}(x_s, y_s)}\right]^{1/2} \tag{12}$$

The scale efficiency change is actually the geometric mean of two scale efficiency change measures relative to period t and s

technology respectively. The extra subscripts v and c in equation are refer to the VRS (variable returns to scale) and CRS (constant returns to scale) technologies respectively. The detail information about this decomposition can refer to Fare et al (1994a). The Fare et al (1994a) decomposition has been widely used and also widely criticized recently due to the inconsistency in whether adopting CRS frontier or VRS frontier to calculate. Actually, It is important that CRS be imposed upon the technology that is used to estimate distance functions for the calculation of this Malmquist TFP index, or alternatively that an appropriate adjustment factor is included to correct for this omission (Orea,2002). The further discussion of these and other related issues can refer to Ray and Desli (1997) and Balk (2003).

There are many methods can be used to measure the Malmquist TFP index, such as DEA method, stochastic frontier method, and etc. Up to now, the most popular and widely used method has been the DEA-like linear programming methods proposed by Fare et al (1994a). According the Fare et al (1994a), the Malmquist TFP index (distance measures) in equation 7 can be calculated by using DEA-like linear programming methodology. For the firm i-th, four distance functions need to be calculated to measure the TFP change between two periods. These four distances can be computed by the

following four linear programming problems (13-16):

$$[D_0^t(x_t, y_t)]^{-1} = \max_{\emptyset,\lambda} \emptyset \ ,$$

$$\text{st} \quad -\emptyset x_{it} + X_T \lambda \geq 0 \ ,$$

$$y_{it} - Y_t \lambda \geq 0 \ ,$$

$$\lambda \geq,$$

(13)

$$[D_0^s(x_s, y_s)]^{-1} = \max_{\emptyset,\lambda} \emptyset \ ,$$

$$\text{St} - \emptyset x_{is} + X_S \lambda \geq 0 \ ,$$

$$y_{is} - Y_s \lambda \geq 0 \ ,$$

$$\lambda \geq 0 \ ,$$

(14)

$$[D_0^t(x_s, y_t)]^{-1} = \max_{\emptyset,\lambda} \emptyset \ ,$$

$$\text{St} - \emptyset x_{is} + X_T \lambda \geq 0 \ ,$$

$$y_{is} - Y_t \lambda \geq 0 \ ,$$

$$\lambda \geq 0 \ ,$$

(15)

And

$[D_0^s(x_t, y_t)]^{-1} = \max_{\emptyset,\lambda} \emptyset$,

$St - \emptyset x_{it} + X_S \lambda \geq 0$,

$y_{it} - Y_s \lambda \geq 0$,

$\lambda \geq 0$,

(16)

where θ is a scalar and λ is a I×l vector of constants. The value of θ is the efficiency score for the i-th firm. It satisfies: θ< 1, according to the Farrell (1957) definition, if θ equal to 1, it indicates a point on the frontier and hence a technically efficient firm. The above four LPs must be solved for each firm in the data sample. The θs and λs can be obtained different values in the above four LPs

As mentioned above, to calculate the scale efficiency change index (equation 12) and a "pure" technical efficiency change index (equation 11), two additional LPs as equation 17 and 18 are required on basis of the above approach.

$[D_0^t(x_t, y_t)]^{-1} = \max_{\emptyset,\lambda} \emptyset$,

$St - \emptyset x_{it} + X_T \lambda \geq 0$,

$y_{it} - Y_t \lambda \geq 0$,

Πλ=l

$\lambda \geq 0$,

(17)

$[D_0^s(x_s, y_s)]^{-1} = \max_{\emptyset,\lambda} \emptyset$,

$St - \emptyset x_{is} + X_S \lambda \geq 0$,

$y_{is} - Y_s \lambda \geq 0$,

$\Pi\lambda = l$

$\lambda \geq 0$,

(18)

Actually, these two LPs 17 and 18 are based on the LPs 13 and14 respectively, only with the convexity restriction ($\Pi\lambda$=l) added to each. This provides estimates of distance functions relative to a variable returns to scale (VRS) technology.

Many of different computer software can be used to solve the DEA problem such as Excel, SAS, SHAZAM and etc. there are also few software special for DEA computing like ONFront, IDEAS, Frontier Analysis and DEAP. This study adopts DEAP version 2.1 to evaluate the DEA and Malmquist index. The valuable instruction of DEAP version 2.1 can refer to Coelli (1996).

4.4 INDICATORS SETTING UP

4.4.1 Factors affecting the performance of the acquirers

The factors affecting the performance of the M&As deals are discussed in the section 2.4. A comprehensive summarization of these factors has been presented in the table 2.2 for providing a reference. In line with the perspective of the M&As theories, motive theories and affecting factor analysis in the chapter 2, the factors adopted in this study are described in detail as the following. The definition and calculation for each variable can refer to the study of Ariel Markelevich (2003). These variables are summarized in the table 4.2.

4.4.1.1 Motives Based on Efficiency Theory

Motives based on efficiency theory means that the aim of conducting M&As is supposed to achieve the efficiency improvement and value enhancement for the acquirer. The following variables can be used to proxy the potential resolutions to realize the efficiency improvement of M&As.

I. Correcting Agency Problem in the Target

As stated in chapter 2, acquirer can improve the efficiency of target firm and realize the purpose of value creation by correcting an agency problem in the target. The agent problem existing in the target can be detected by these three methods say analyzing cash

flow, investigating cash flow and growth opportunities, and examining the firm's debt. The latter two methods will be adopted in this study. First of all, the study test the relationship between firm's level of cash flow and growth opportunities to detect the agency problem in the target, which was proposed by Stulz (1990), and Lang. Stulz and Walkling (1991) based their work on Jensen's theory (1986).

The level of cash is equal to sum of cash and short-term investment divided by the book value of total assets.

Target's growth opportunities can be measured by using Tobin's Q (Lang. Stulz and Walkling, 1991). The calculation of Tobin's Q shall adopt approximation modified by Chung and Pruitt (1994), like

Tobin's Q = (Firm's market value + liquidation value of preferred stock+DEBT)/ Total assets

Where market value use the stock price 30 days before the announcement of the deal multiplied by the number of outstanding shares. The liquidation value of preferred stock is acquired from the database CSMAR. DEBT is equal to the sum of the value of short-term liabilities, net short-term assets, and the long-term debt.

The second method used to detect the agency problem of target in

the study is to examine the target's debt prior to M&As announcement. The target's debt equal to the sum of long-term debt and short-term debt divided by the book value of assets. Suboptimal level of firm's debt is calculated as the deviation from the industry medium debt, which used as proxy for the optimal level of debt (Hull, 1999).

II. Reducing Target's Management Inefficiency

As has been discussed in chapter 2, there are such four methods as ROE, ROA, Tobin's Q and tender offer can be used to identify the target's management inefficiency. Target's return on equity (ROE) is calculated by dividing income before extraordinary items by common equity. To minimize effect of fluctuation of the market, following Palepu (1986) and data available, the study will adopt an average of three year's ROE prior to the deal announcement. Regarding to the return on asset, it is equal to the value of income before extraordinary item divided by total assets of the firm in the year before M&As transaction announcement.

Tobin's Q is another indicator generally used to detect the management inefficiency (Lang, Stulz, and Walkling, 1989, Servaes, 1991, and Weston et al., 2001). Low levels of Tobin's Q, which means less than one, would suggest that the firms existing management inefficiency.

The last method to identify the target's management inefficiency is to review the bid method of transaction. If tender offer is adopted, it shows that the target firm has management inefficiency since the acquirer tends to improve the target's management.

III. Economics of Scale

Economics of scale can be realized when the target and acquirer belong to the relevant industry. Real estate developers can achieve the economics of scale by takeover the relatedness industry firms with real estate industry, no matter in vertical merger or horizontal merger. The value of this variable is a binary indicator. When a takeover has taken place within the relevant industry, the value of the variable is equal to 1 or else to 0. Additionally, since the real estate industry has a high degree of localization, another important way of realizing the economics of scale in the industry is by growing out of their regional or national markets and penetrating into new markets. Expansion to anther regional market by M&As activities can avoid the barriers like government regulation, registration license, land bank, taxation, and qualification etc. Even better, it also obtains protection by the barriers, as it operates locally in the expanded market just as a local firm. Therefore, this study will also adopt this variable to represent the achievement of economics of scale. The variable of new regional penetration is

also a binary indicator, which is equal to 1 when the M&As transaction is a cross region and province, or else to 0.

IV. Financial Synergy

Financial synergy by lowering the cost of capital is another important motive for conducting M&As deals. The first method for reducing the cost of capital is to merger a target with high levels of cash. Hence, this study will use the target's level of cash as a variable to proxy the financial synergy. Another method to achieve the synergy of financial is through using the financial slack between the target and the acquirer. The financial slack appears when the target and acquirer have different financial leverages. The financial leverages equal to the ration of long-term debt to the market value of assets. Market value asset herein is calculated as the sum of debt, market of value 30 days prior to the acquisition announcement, and the liquidation value of preferred stock. The financial slack is equal to the arithmetic difference between the acquirer and the target.

4.4.1.2 Motives on the Basis of Redistribution Theory-Tax Saving

Redistribution theory explains that the bidder achieves the value by transferring the value of other parties involved in M&As deals. The

taxing saving, one of redistribution theory, is considered as the motive to conduct M&As deal for real estate industry firms.

As has been mentioned in the chapter 2, taxing saving is also a motive for conducting M&As deals. Two type's target has the potential of taxing saving, namely, the target with Net Operating Loss (NOL) and with Investment Tax Credits (ITC) prior to acquisition announcement. The target's unused pre-acquisition net operating loss can be measured by using operating loss carried forward divided by the total market value of both firms 30 days prior to the announcement. The target's Investment Tax Credits pre-acquisition is calculated by employing long-term debt divided by total market value of both firms 30 days prior to announcement.

4.4.1.3 Motives Based on the Behavioral Theory

The behavioral theories mainly contain managerial agency problem and hubris as described in the chapter 2. The study will use following variables to present these two theories.

I. Detecting Managerial Agency problem

Managerial agency as a motive for M&As implies that it is not in the interest of shareholders but for the managers of the acquirer as aforementioned in chapter 2. Therefore, the study identified these kinds of motives by detecting the agency problem in acquirers and

disclosing the M&As deals which only supposed to benefit the acquirer's management. The methods used to detect the acquirers' managerial agency problem is same as these adopted to identify the target's agency problem. The variables used to identify the acquirer's managerial agency problem include checking interaction between the acquirer's cash and its Tobin's Q, the acquirer's industry adjusted level of debt, and acquirer's ownership. Diversifying M&As are considered as only in the interest of the acquirer's management but not for the acquirer's shareholders. The detecting of diversifying M&As can also use the binary variable to check whether the target and acquirer belong to the similar industry or not. As the variable is adopted in the efficiency theory motives, the variable will be omitted in this item.

II. Variables Used to Detect the Hubris

The hubris can be caused by the difficult in evaluating the target's value as the target has large portions of intangible assets or has high volume of research and development (R&D) expenditure. The study use the value of net property, plant and equipment divided by the total assets to proxy the portion of the tangible assets out of the total assets. The portion of intangible assets out of total assets is equal to one minus the value of portion of the tangible assets.

In addition, when there are multiple bidders compete in bidding, it

will also leads to the appearance of hubris. This variable is also binary indicator, where the variable equals to one as appearance multiple bidders or else to zero.

Table 4-2 Summary of variables affecting the performance of M&As

Theory Foundation	Hypothesis	Variable	Calculate method
Efficiency theory	Correcting an agency problem in the target	Targets cash and growth opportunities	((Cash+short-term investment)/Total assets)* Tobin's Q
		Targets level of debt	(Total Debt/book value of asset)-industry median
		Targets return on equity (ROE)	Value of income/common equity
		Targets return on assets (ROA)	Value of income/total assets
	Reducing targets management inefficiency	Low level Tobin's Q for the target VS High levels of Tobin's Q for the acquirer	(Firm's Market value + liquidation value of preferred stock +Debt)/Total assets
		Tender offers	binary indicator
	Economies of scale / agency	Relatedness industry expansion	binary indicator
		New regional penetrate	binary indicator
	Financial synergy	Target's level of cash	Cash of target
		Arithmetic difference between the acquirer and target's financial leverages	Long term debt/ (Firm's Market value + liquidation value of preferred stock +Debt)
Redistribution Theory	Tax savings	Target's pre-acquisition net operating loss carry forwards (NOL)	operating loss carryforward /(Market value of combined firm)
		Target's pre-acquisition	Long-term debt/(Market value of combined firm)

		investment tax credits (ITC)	
		Acquirer's cash and growth opportunities	((Cash+ short-term investment)/Total assets)* Tobin's Q
Behavioral theory	Agency	Acquirer's level of debt	(Total Debt/book value of asset)-industry median
		Relatedness industry expansion	binary indicator
	Hubris	Target's level of tangible assets	value of net property, plant and equipment/Total assets
		Multiple bidders	binary indicator

4.4.1.4 Other Control Variables

In addition to the above summarized variables, there are still some other variables playing significant roles in affecting the performance of post-merger. As these variables are not the directly motives for M&As deals, it is not suitable for considering as the motive variables. So, these variables are regarded as control variable playing effect on the performance of M&As in this study. These kinds of variables include industry characteristic variables, multiple acquisitions (number of deals, experience of acquirer), method of payment (stock or cash), accounting method, and relative size of target as shown in table 3-7.

I. Industry Characteristic Variables

Each industry has its unique characteristics which distinguish itself from other industries. These characteristics not only formulate the strength or weakness of industry, but also affect the development

of the industry. Undoubtedly, the real estate industry is an emerging and important industry with special and unique features such as scattered market distribution, financial-intensive, relative lower technology, one-off, and site fabrication and localization etc. These special futures have impact on the development of the real estate industry as well as the M&As transaction of real estate firms. Hence, to reflect the effect of characteristics of the real estate industry on the M&As deals taken place by developers, the following factors will be considered as control variables in the study.

The factor that impacts the M&As activities happened in an industry is the industry shock. As testified by the study of Mitchell and Mulherin (1996), the industry shock has the significant relationship with the takeover and restructuring activity. The concept of industry shock is regarded as any factor that impacts the industry structure, including changes in the numbers of firms, government policy change, demand and supply change and etc. on the part of the real estate industry, the straightforward reflection to the industry shock is the market volume, as no matter internal or external factors' impact on the real estate industry will induce the fluctuation of real estate market volume. Therefore, this study adopted the real estate market volume as the control variable.

Otherwise, another effective variable used to reflect an industry's shock is the volume of the M&As deals taken place in the industry. On the other hand, if an industry is experiencing a wave of M&As, firms may have more passion to participate the activities of M&As as stimulating by peer-pressure. Hence, the study also uses the volume of M&As conducted by real estate firms in every year as a control variable. The data of volume of M&As transaction can be acquired from the CSMAR database.

II. Multiple Acquisitions

The numbers of deals and the experience of acquirer also play vital roles in explaining the short-term performance of M&As deals like stock-market's reaction to the transaction and the long-term performance of post-merger. Regarding to the number of M&As deals involved in the acquirer, Schipper and Rex (1983) thought that there exists a clear distinction between a specific M&As event and a series M&As program, and found that M&As activities have a positive effect on the value of the acquirer. The difference between a specific M&As event and a series M&As program is the short-term stock market's reaction (Schipper and Rex). In term of the experience of the acquirer, as Carlisle (1995) stated "Practice makes perfect", Carlisle identified that the stock market's reaction to an experienced acquirer's M&As announcement are more

positive than to an M&As deal announcement made by a green hand acquirer.

In order to interpret the effect of multiple acquisitions on the performance of M&As deals, the above-mentioned two factors will also be considered in this study. A binary variable will be adopted to represent the series of M&As program. If the acquirer involved in another acquisition during the three years before the M&As deals announcement, the variable equals one, otherwise equals zero. Additionally, the times of M&As transaction taken by the acquirer during the period of observation are used to proxy the experience of the acquirer in the study.

III. Method of Payment

The method of payment has been identified as an important factor affecting the short-term and long-term performance of M&As transactions by many previous studies. Andrade et al. (2001) found that the abnormal returns surrounding the announcement are lower when stock is used as payment method. The stock financed acquisition was interpreted as an acquisition plus an equity issue by Andrade et al. As the explanation given in the model of Myers and Nicholas (1984), equity issuers generally acquire negative abnormal returns during the equity issue. Therefore, the M&As transaction financed by stock would achieve lower abnormal

returns than that financed by cash. Furthermore, Loguhran and Vijh (1997) examined the effect of method of payment on the long-term performance of M&As transactions. The result of the Loguhran and Vijh's study displayed that M&As deals financed by stock earn obtain significantly lower abnormal returns during the five years after the transactions are completed than the M&As deals financed by cash.

The choice of payment method –stock or cash, could be affected by many other factors. There are also many scholars that studied this issue from different perspectives. Amihud et al. (1990) stated that managers who are eager for the power of control would prefer cash to stock when financing the M&As deals, since the stock method could dilute their ownership or control power in the combined entity. Therefore, Amihud et al. identified that the more decentralized managerial ownership of the acquirers, the higher probability to adopt the cash as method of payment in M&As transactions. Ghosh and Ruland (1998) also investigated the relationship between the manager's preferences for control and the choice of payment method, and found that there is an existing positive relationship between the target's managerial ownership and the payment by stock and negative association between the acquirer's managerial ownership and use of stock as payment.

Martin's (1996) study focus on the motives behind the method of payment in M&As transactions, which found that the method of payments are closely connected with the acquirer's growth opportunities and cash availability. In additional, Martin also identified that there are existing significant relationship between the method of payment and managerial ownership (used to identify the agency problem) and pre-acquisition stock returns (used to detect hubris).

This study uses the method of payment as a control variable for the evaluation of performance of M&As transaction. The method of payment by stock or cash can be obtained in the SDC database. The value of variable equals to one when stock is adopted as payment method, or equals to zero when payment by cash.

IV. Accounting Method

Accounting method is another important factor that could greatly affect the performance of post-merger in long-term and stock's reaction to acquisition announcement in short-term. As explained in the Accounting Principles Board Opinion No. 16 --Business Combinations (1970), both purchase and pooling of interest methods are acceptable in accounting for M&As transaction. Generally, it is believed that managers prefer the pooling of interest method as it can evade the additional depreciation and

amortization expense arising from the assets write-up using the purchase method (Aboody, Kasznik, and Michael, 2000). Aboody et al. (2000) found that managers are more likely to choose the pooling of interest method to avoid the negative effect on the earning arising by using purchase method, especially when there are large differences between the acquisition prices and the book value of the target's net assets. Robinson and Shane (1990) identified a closely relationship between the accounting method and the target's cumulative abnormal returns (CAR). The deals using pooling of interest method realized higher target's CAR than the deals applying the purchase method.

To detect the effect of the accounting method on the performance of M&As transactions, a binary variable was used to proxy the accounting method adopted in the transactions, which can be identified in the CSMAR database. If the pooling of interest method were used in the deal, the binary variable equals to one, otherwise it equals to zero.

V. Relative Size of Target

The relative size of target compared to the acquirer has been considered as an important factor influencing the both short-term and long-term performance of M&As transaction. Palepu (1986) found that the probability of M&As deals is negative with size of

target firms, which based on the assumption of the size based transaction costs. Similarly, Ambrose and William's study (1992) returns to the consistent result. In addition, Martin's (1996) proved another explanation that the larger the target size the likelier it has high levels of information asymmetry problem. Furthermore, it is probable that the impact of target on the post-merger integration increase with the size of target.

The study adopted the relative size of target to the acquirer as a control variable to investigate its effect on the performance of M&As deals. The relative size of target compared to the acquirer is calculated by using the target's market value 30 days before the deal announcement divided by the acquirer's market value in the same time.

Table 4-3 Control variables

Control variables	**Variable**
Industry characteristic	Real estate market volume M&As deal volume in real estate industry
Multiple acquisitions	series of M&As program Experience of acquirer (Times of M&As)
Method of Payment	Stock, Cash or others
Accounting Method	Pooling or Purchase (1,0)
Relative size of target	Relative size of target

4.4.2 Evaluation Factors for the Performance of Developers

To reflect the feature of real estate industry firms, this study adopted Michael E. Porter's Five Forces theory to analyze the real estate industry's operational characteristic and select the representative evaluation indicators accordingly.

The five forces include the threat of the entry of new competitor, the threat of substitute products or services, the bargaining power of customers (buyers), the bargaining power of suppliers and the intensity of competitive rivalry. Three of five forces refer to competition from external sources, and other two forces are internal threats. The impacts of these five forces on the real estate industry are separately analyzed as followings.

4.4.2.1 The Threat of the Entry of New Competitor

The real estate firms' operation demands an expensive financial commitment to cover the high price of land acquisition and enormous capital expenditure of construction process. This feature of real estate industry requires that one of the first qualifications for a developer is to have financing ability with both internal capital and external capital financing channels. Hence, the capital strength erects one of the very significant barriers for new competitor entry into the real estate industry.

From this point of view, the liability ratio and stockholders ‘equity ratio are suitable to be selected as input indicators in this study, since these two ratio are inverse ratios to each other. The selection of Equity ratio as an input indicator in this study is based on the consideration of the same direction for all ratios. Furthermore, the return of stockholders ration is adopted as an output indicator for assessing the contribution of capital inputs.

4.4.2.2 The Threat of Substitute Products or Services

The products of the real estate industry such as residential property, industry property and commercial property provide a material basis for livelihood, production and various economic activities. The threat of substitute products or services can only come from the real estate industry itself. The customers can choose different kinds of products under each of above mentioned three segments of real estate products to satisfy their functional demands. For example, for a residential customer, apartment, house and villa can substitute with each other to satisfy the housing demand of the customer. For the real estate industry firms, the substitute products are the diverse selection among different kinds of product developed in the real estate industry. Therefore, as this feature of real estate industry will not affect the performance of real estate firms too much, there is no

indictors adopted for measuring the performance from the this perspective.

4.4.2.3 The Bargaining Power of Customers (Buyers)

As the customers of real estate industry consist of a large numbers of small medium individuals or enterprises, they are in a weaker bargaining position than the cash-rich property developers especially when economic environment is robust and property market is hold up. As the high price of property, consumers may purchase the property only with sufficient financial ability and with confidence to economic outlook. The customers' intentions of property purchasing will be influenced by their expected income and their attitude toward the future economic boom. It is necessary that developers should formulate operation strategies appropriately according to fluctuation of economic situation. To reflect the impact of this industry feature on the real estate firms' performance, Inventory turnover which represent the property sells status is selected as an input indicator in this study. It can be used to measure the operation output of developers and assess their input of resources. The Return on sales is selected as a corresponding output indicator. Furthermore, the products manufacture process of real estate industry needs relatively longer time and massive

capital investment. Despite property projects' presales can provide some capital earlier, developers still need to obtain financing through various channels to cover the huge amount of capital of construction costs. The construction costs are always covered by current assets (short-term capital) or current liability (short-term financing) during the construction period. The currents assets minus the inventory and prepaid accounts are equal to Liquid capital. Liquid capital can be used to calculate the quick ratio which equal to the liquid capital divided by the current liability. This ratio measures the ability of firm to use its Liquid capital to extinguish its current liabilities immediately. Therefore, this ratio can be adopted as an output indicator for measuring the performance of current assets application.

4.4.2.4 The bargaining power of suppliers

For the real estate industry, there are generally two types of suppliers comprising suppliers of land and suppliers of construction services. Construction services are commonly provided by contractors. As the real estate industry is a completely competitive market and also the competition among contractors is very fierce, contractors generally in a weaker bargaining position than developers. Some big developers even have their own

construction subsidiaries, which further lower construction suppliers' bargaining ability. On the part of land suppliers, they are generally government and sometimes private owners. It is recognized that land for developing in city areas is a scarce resource, therefore, real estate firms always need to purchase land through fierce open auction. Developers are in a lower bargaining position during land acquisition process. As land often is regarded as a core production material by developers, they invest in land as a kind of long-term asset. Furthermore, land also can be used as a mortgage tool for developers financing so as to obtain quick cash. Moreover, as the value of properties is high, real estate firms use the financial instruments like mortgage to lower the cost of initial investment such as the 20% to 30% of down payment to buy a house. This method can raise the interest of consumers greatly and finally stimulate their appetite to buy properties. In addition, by using the method, developers can generate the more cash flow and transfer the risk of collecting money in account receivable to financial institutions like banks. To reflect the developers' financial performance from the above mentioned feature, therefore, the Receivable Turnover Ratio is adopted as an input indicator, and the cash flow ratio is selected as an output indicator accordingly in this study.

4.4.2.5 The intensity of competitive rivalry

The competition among real estate industry firms is in a very high intensity. The developers need to compete in property price, property quality and service, product delivery and etc. All of these aspects are affected by the characteristics of real estate industry such as relative long production period, one-off project, manufacturing on site and products unmovable. The specific characteristics of the real estate industry not only impact on the competition pattern of real estate market, but also on the operation method of real estate firms themselves. Therefore, the features like vast resources investment and long construction period make the profitability of real estate firms particularly vulnerable to the fluctuation of its economic environment and instability of market. To detect the effect of market competition on the developers' performance, this study adopts the return of assets and Return on sales as the output indicators.

Based on the abovementioned discussion, this study establishes the input and output evaluation indicators for measuring the financial performance of real estate firms as shown in Table 4-4. There three input indicators comprising stockholder's equity ratio, Inventory turnover, and Receivable Turnover Ratio, and five output indicators including Return of equity, Return on sales, quick ratio,

cash flow ratio, and return of assets.

Table 4-4 Summary of inputs and outputs indicators

Indicators of financial ratios	
Input ratios	Output ratios
Equity ratio	Return of equity
Inventory turnover	Return on sales
Receivable Turnover Ratio	Quick ratio
	Cash flow ratio
	Return of assets

4.5 ESTIMATION WINDOW

To analyze the effect of M&As on the performance of Chinese real estate firms in our sample by measuring their BHAR and Malmquist TFP index, the estimation window should be set up to reflect the comparison of the situations between prior and after the event of acquisition. To use event study to calculate the BHAR of acquirers in long-term post-acquisition, the performance of three years after the acquisition effective are investigated, while to estimate the change of TFP in acquirers, four time point including t-1(one year prior to acquisition), t+0 (acquisition announcement), t+1 (one year after acquisition) and t+3 (three years after acquisition) are selected in this study. These periods point forms

two windows (1) from one year prior acquisition (t-1) to one year after acquisition (t + 1); and (2) one year prior to acquisition (t-1) to three years after acquisition (t + 3) to see the short-term effects and relatively long-term effects of M&As.

CHAPTER 5. RESULTS AND DISCUSSION

5.1 SUMMARY DESCRIPTION

To provide general background and context for the M&As performance study, this section begins with representation of the summary statistics on Chinese real estate M&Ass' firm and deal characteristic in our sample based on the indicators established in the section 4.4.1, which could classified into firm's and deal's characteristic indicators respectively, and then summarizes the indictors of inputs and outputs in this study, which based on the performance indicators proposed in the section 4.4.2.

5.1.1 Description of Characteristics of Acquirers and Targets

The operating characteristic of acquirers and targets in the Chinese real estate industry are summarized in the table 5-1. The acquirers are on average much larger than targets at about 2.77 times, with mean assets of 9.07 billion Yuan versus 3.28 billion. In terms of debt, the acquirers are 2.35 times larger than targets, with average debt 5.6 billion and 2.4 billion respectively. There have much cash with a mean of 1.4 billion Yuan on hand for acquirers to conduct M&As deals. As table 3 illustrates, acquirers on average have 3.5

times much more cash than targets. Similarly, the market value of acquirers on average is also larger than that of targets with a difference of 2.25 times. The difference of market value (2.25) is slightly smaller than the assets difference (2.77), which implies that the expectation from market on firms' value for targets is a bit larger than that for acquirers. To sum up the above description, it can be concluded that the M&As activities in the real estate industry include such three distinguishing features as big developers acquire the relative smaller target firms, acquirers have large amount of cash and targets have enormous potential for development. Those feature consistent with the status of the Chinese real estate industry development. It implied that the Chinese real estate industry is still in the stage of a development boom, and it is obvious that the M&As in real estate is driven by the industry prosperity rather than industry shock.

Unlike above indicators, on the part of the remaining indicators as financial leverages, Tobins' Q, Cash & Growth, and return on equity and return on assets, the average value of acquirers are all smaller than that of the targets. The targets mean financial leverage is slightly larger than that of the acquirers. Tobin's Q is an indicator generally used to detect the management efficiency of firms (Lang, Stulz, and Walkling, 1989, Servaes, 1991, and Weston

et al., 2001). Low levels of Tobin's Q, defined as a value of less than one, would indicate an inefficient management. Target's growth opportunities can be measured by using Tobin's Q which can be calculated by equation (Chung and Pruitt, 1994): Tobin's Q = (Firm's market value + liquidation value of preferred stock+DEBT)/ Total assets. In the sample, the targets average Tobin's Q is 5.3 (big than 1), which is larger than the average of acquirers (2.9). It indicates that the targets' average management efficiency is higher than acquirers'. Cash & Growth is a useful indicator to identify the agent problem of a firm proposed by Jensen (1986) and then extended by many scholars like Stulz (1990), and Lang, Stulz and Walkling (1991). They suggest that an agent problem can be detected by examining the firm's level of cash flow and growth opportunities. For example, high levels of cash flow, but low growth opportunities imply the presence of an agency problem. Regarding to this study sample, the targets have much higher Cash & growth than the acquirers, which implies that the targets have significantly higher agent problem than the acquirers. The last two indicators ROE and ROA are used to reflect the capacity of profitability for a firm. Obviously, the targets profitability is much higher than acquirers in the sample. Overall, the acquirers in the Chinese real estate industry have a larger

business scale than targets, but targets have higher management efficiency and profitability then the acquirers.

Table 5-1 Operational indicators of acquirer and target

Items	Acquirers			Targets			Different: acquirer/ target
	Mean	Min	Max	Mean	Min	Max	
Total assets (Yuan)	9.07E+09	3.63E+07	5.98E+10	3.28E+09	610441	5.48E+10	2.77
Debt (Yuan)	5.63E+09	1.59E+07	3.95E+10	2.40E+09	514617	3.35E+10	2.35
Cash (Yuan)	1.40E+09	3993385	8.92E+09	3.99E+08	-2.31E+08	6.03E+09	3.51
Market value (Yuan)	1.15E+10	1.77E+08	6.76E+10	5.12E+09	71642.25	5.48E+10	2.25
Financial Leverages	11.8840	1.6700	74.3200	12.2216	0.0073	58.3294	0.97
Tobin's' Q	2.9390	1.5500	7.0700	5.2771	1.5615	37.0533	0.56
Cash & Growth	0.3963	0.0800	1.4700	2.2948	0.0426	37.1513	0.17
Return on Equity	0.1150	0.0000	0.4400	0.1885	0.0198	0.8881	0.61
Return on Assets	0.0588	0.0000	0.3600	0.0792	0.0019	0.3585	0.74

Note: Tobin's Q is an indicator generally used to measure the management efficiency of organisations (Lang *et al*, 1989, Servaes, 1991, Chung and Pruitt, 1994). Tobin's Q = (the organisation's market value + liquidation value of preferred stock DEBT)/ Total assets; If T's Q less than one, an inefficient management is indicated. Cash & Growth is a useful indicator to identify any agent problems (Jensen, 1986 and Lang *et al*, 1991). High levels of cash flow, but low growth opportunities imply the presence of an agency problem.

5.1.2 Description of Deal Characteristics

Descriptive deal characteristics of the sample are presented in

Table 5-2. Some of the important observations as follows: (a) most of the M&As are conducted through negotiation or agreement, while very few deals are made via tender or bid. That is consistent with the feature of Chinese M&As market- "hostile M&As through second board are rare in China" discussed in section 3.1.2; (b) There is a significantly higher percent of related acquisitions than unrelated acquisitions. That implies that most of the real estate developers are attempting to develop and expand their main business – real estate, but not to diversify or exit. It can be explained that the real estate industry is very attractive in China as it is still in the development stage; (c) More than a half of M&As transactions are paid by cash in the real estate industry, which is also in accordance with summarization in section 3.1.1. The cash payment of deals is a very high ratio in Chinese real estate industry compared to the developed countries like US and Europe as they have more diversified non-cash payments; (d) Most of acquirers are the growth firm; (e) The majority of acquirers' boards are non-independent, and their executives and directors' ownership are less than 5%. Meanwhile, blockholder ownership (more than 10%) is account for about a half in acquirers. It is representative of the characteristics of Chinese real estate corporate governance; (f) In terms of deal size, about a half of deals' value range from 100 to

1000 million Chinese Yuan. And about 28 percent of the deals' value are more than 1000 million Chinese Yuan. Deal size is relative small by comparing with the size the acquirer. Nearly 40 percent of deal's transaction value is less than 5 percent of the acquirer's market value. The above mentioned deal features are quite different from developed markets like the US, UK and EU M&As deals. Through the statistical analysis for the sample, the Chinese real estate industry is experiencing a style of "the big fish eat fingerling" acquisition, within which big developers with large amounts of cash acquire the high development potential targets. Consequently, the M&As in real estate is obviously motivated by the booming of industry rather than industry shocks.

Table 5-2 Summary of deal characteristics indicators of acquirers

Deal characteristics Indicators	sub-categories	Number	Percentage
Deal value	< 100M CNY	7	22%
	100-1000 M CNY	16	50%
	> 1000 M. CNY	9	28%
Tender or agreement	Tender	1	3%
	Agreement	31	97%
Related/unrelated	Related	28	87.5%
	Unrelated	4	12.5%
Payment methods	Cash	19	59%
	Stock	7	22%
	other/mixes	6	19%
Growth/value acquirers	Growth	30	94%
	Value	2	6%
Chair related	Related	2	6%
	Unrelated	30	94%
Board independence	Independent	2	6%
	Non-independent	30	94%

Director ownership	< 5%	29	91%
	5-25%	2	6%
	>25%	1	3%
Executives ownership	<5%	30	94%
	5-25%	2	6%
	>25%	0	0%
Blockholder ownership (State ownership	<10%	17	53%
	10-25%	3	9%
	25-50%	6	19%
	>50%	6	19%
Relative size	<5%	13	41%
	5-25%	9	28%
	>25%	10	31%

Note: The sample contains of annual observations of acquirers firm-specific indicators and deal-specific variables when deal making. Deal value is the total transaction value in million Chinese Yuan. Tender or agreement is a binary indicator. If the M&As are conducted through tender or bid, the value is equal to 1, or if the deals are made through negotiation, agreement or other similar manner, the value is 0. Related or unrelated is also a binary variable. If acquirer merger a related target, also name related acquisition, the value is 1, or if acquirer takeover a unrelated target, say diversification acquisition, then the value is o. that can be detected by the standard of industry classification of CSRC, in brief, if target is also belong to the real estate industry, it is the related acquisition, or if target is from other industry, it can be regarded as a diversification acquisition. Payment method is a classified variable presenting the mode of deal payment. Three types of payment are included like cash payment, stock payment and others or mixed. Growth or value is a binary variable, growth is 1 and value is 0. Growth acquirer means that its price-to-book value ratio is bigger than 1, while value acquirer refer to its price-to-book value ratio is smaller than 1. Chair related is a dummy variable. It equal to 1 if chair is related to management or the board like CEO is chair of board. Otherwise, it is 0. Board independence is a binary variable, it equal to 1 if majority (more than a half) of the board are independent, or else, it is 0. Director ownership is the share hold by all directors of the acquirers, which divided into three categories as less than 5%, 5-25%, and more than 25%. Executives' ownership means shares owned by the executives of the firm, which classification is same as the Director ownership. Blockholder ownership refers to the share percentage owned by the institutions, state owner or individuals (other than the directors) which hold more 10% of share of acquirer. Blockholder ownership include such four types as less than 10%, 10-25%, 25-50%, and more than 50%. Relative size refers to the ratio of deal value against market value of acquirer. It also divided into three categories: less than 5%, 5-25%, and more than 50%.

5.1.3 Summarization of Input and Output Indicators

Another summarization is made for the input and output indicators in Table 5-3. The equity ratio is increased slightly from 0.36 in pre-acquisition to 0.39 and 0.38 in one year and three year after acquisition respectively. It indicates that the acquirers' capital

commitment increased after acquisition. As has been mentioned above, inventory turnover measures the number of times inventory is sold or used in a fiscal year, and it equals the cost of goods sold divided by the average inventory. In this study, the acquirers' average inventory turnover decreased significantly from 0.94 in period t-1 to 0.44 in period t+3, which present that when given the cost of goods sold unchanged, the inventory are sharply increased. Another input indicator, similarly, receivables turnover measures the number of times, on average, receivables are collected in a fiscal year. This indicator decreased dramatically from 227 to 117 at first in the short-period from t-1 to t+1, but then increased slightly to 241 in the long period t+3. In terms of out-put indicators, both return on equity (ROE) and return on sales (ROS) increased significantly from pre-acquisition to post-acquisition. The acquirer's average quick ratio has experienced little fluctuation from t-1 to t+3. Reversely, cash flow ratio has great volatility during the same period. Finally, it has been a substantial rise in the acquirers' return of assets on average from t-1 to t+3. Specially, the short term increasing at mean 0.06 is larger than that of long-term at 0.04 on average in the sample.

Table 5-3 Input and output indicators (32 samples)

Items	t-1			t+0			t+1			t+3		
	Mean	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**
Equity ratio	0.36	-0.79	0.89	0.36	-0.74	0.75	0.39	0.21	0.75	0.38	0.18	0.71
Inventory turnover	0.94	0.03	6.55	0.67	0.14	3.48	0.49	0.02	2.31	0.44	0	3.76
Receivables turnover Ratio	227	1	5270	139	4	1990	117	2	1098	241	3	2141
Return on equity	-0.06	-1.5	0.33	0.12	0	0.44	0.12	0	0.55	0.11	-0.02	0.38
Return on sales	0.23	-0.44	0.51	0.26	0.09	0.44	0.32	0.07	0.71	0.3	0.08	0.56
Quick ratio	0.69	0.08	2.11	0.58	0.1	1.45	0.72	0.09	2.33	0.68	0.22	1.79
Cash flow ratio	-0.04	-1.37	0.78	0.04	-0.89	1.79	-0.13	-1.19	0.75	-0.1	-0.45	0.45
Return on assets	0.02	-0.23	0.15	0.06	0	0.36	0.05	0	0.31	0.04	-0.01	0.1

Note: t-1 means one year prior to the deal effective. T+0 is the deal effective, and t+1 & t+3 are refer to the one year and three years after the acquisition made respectively. Equity ratio is the ratio of the total owner's equity to total asset. Inventory turnover measures the number of times inventory is sold or used in a time period such as a year. It is equal to the cost of goods sold divided by the average inventory. Receivables turnover ratio is a measure of the times of receivables are collected on average during a period like one year. It can be calculate by using the sales revenue divide by the average receivables. Return on equity, return on sales and return on assets measure the rate of return on the shareholders' equity, net sales and total assets. They are equal to the ratio of net profit against equity, operating income to revenue, and net income against total assets respectively. Quick ratio measures the capacity of a company to extinguish or repay its current liabilities immediately by using its *near cash* or quick assets. It is equal to the difference between current asset and inventory divided by the current liabilities. Cash flow ratio is equal to the ratio of operating cash flow against the current liabilities.

5.2 RESULTS OF EVENT STUDY

The event study result-BHAR of the sample firms during three years after M&As deals effective are presented in the table 5-4. As shown in the table, all of the three BHAR of acquirers show

underperformance. The long-term abnormal return results are significantly different with respect to the selection of benchmarks. On average, acquirers suffer the negative long-term return after acquisition by using all of the benchmarks. Of which BHAR of acquirers using benchmark 3 experienced the sharpest decrease by 35% after acquisition, and in benchmark 1 and benchmark 2, acquirers' BHAR were reduced 16% and 4% respectively. These results illustrate the importance of selection of the appropriate benchmarks when evaluating the long-term performance of the acquiring firm after acquisition.

Table 5-4 Buy-and-Hold Abnormal Return (BHAR) of Acquirers

Acquirer	BHAR 1	BHAR2	BHAR3
1	9%	-149%	80%
2	-40%	-48%	-8%
3	-16%	-199%	-330%
4	-101%	-164%	-115%
5	-67%	-17%	10%
6	-40%	-97%	-65%
7	-121%	-343%	-64%
8	115%	70%	-102%
9	63%	56%	44%
10	-47%	1%	-58%
11	-82%	-125%	-237%
12	-19%	-9%	-15%
13	-30%	-38%	-73%
14	18%	24%	-8%
15	-39%	-27%	6%
16	15%	26%	-25%
17	-24%	-13%	-53%
18	-21%	-11%	29%
19	51%	18%	18%
20	72%	82%	71%
21	-37%	-24%	-49%

22	-23%	-10%	18%
23	8%	11%	36%
24	-51%	-43%	-45%
25	-6%	-4%	-97%
26	55%	14%	-4%
27	-4%	7%	14%
28	-27%	-6%	16%
29	-6%	14%	-2%
30	-58%	-46%	-25%
31	-116%	-339%	-115%
32	56%	49%	35%
Mean	-16%	-4%	-35%
Standard Deviation	0.54	1.01	0.83
Minima	-121%	-343%	-330%
Maxima	115%	82%	80%

Note: Buy-and-hold abnormal return is equal to the mean difference in the cumulated performance between the sample firms and the benchmarks over three years after the effective of acquisition. In line with the different benchmarks, three BHARs are obtained. BHAR1, BHAR2, and BHAR3 represent the BHARs based on the benchmark1, benchmark2 and benchmark3 respectively. Benchmark1 is refers to Shanghai & Shenzhen exchange index return. Benchmark 2 use the Chinese real estate industry index return. Benchmark 3 use the mean return of a portfolio of three matching firms selected on the basis of size and book-to-market ratio.

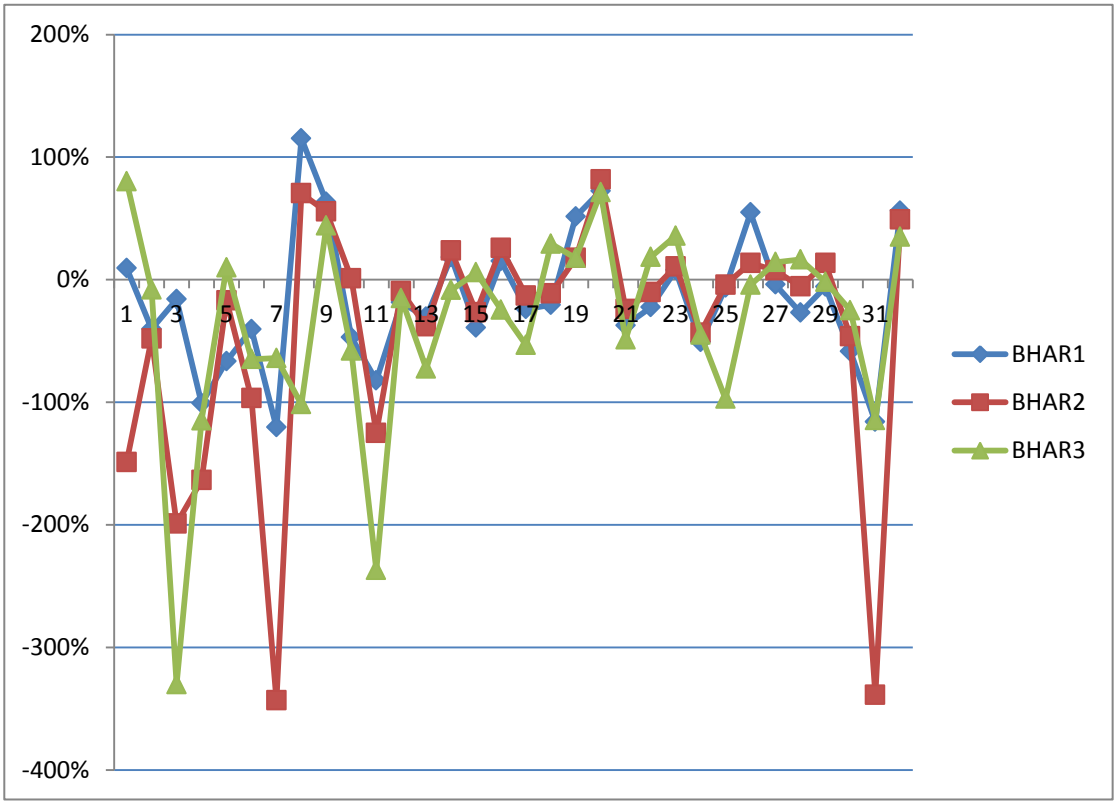

Figure 5-1 BHARs of acquirers under each benchmarks

Further, some information can be extracted from the overall result of these three benchmarks. Figure 5-1 present a distribution of the each acquirer's BHAR result through a line chart. In general, three BHAR results based on the three different benchmark methods follow similarly trends. The BHAR result under benchmark 2 has the largest swing, while the result upon benchmark 1 has the smallest fluctuation. As shown in the chart, Benchmark 3 produces the best of BHAR result among the three benchmark results, which is consistent with the concept benchmark formulation. Regarding to the result of BHAR, most of which range between -100% and 100%, the number of positive BHAR result is significantly more than the number of negative BHAR result. It implies that most of the developers obtain poor long-term performance after M&As deals.

For the further analysis of the BHAR result, the table 5.5 with the detailed statistics is provided as the following. It can be seen that all of the three BHAR result's 50% percentiles are less than -10%, say, -21.6%, -10.75% and -11.75% for benchmark 1, benchmark 2, and benchmark 3 respectively. It means that more than half of the sample developers suffered a substantial decrease of performance after acquisition. The values in 25% percentiles are -43.69%, -47.19% and -64.41% for benchmark 1, benchmark 2 and

benchmark 3 accordingly, which illustrates that a quarter of sample developers have nearly 50% loss when conducting M&As deals. However, the results of BHAR based on benchmark 1, benchmark 2 and benchmark 3 at 75% percentiles are 12.26%, 13.53% and 17.5% respectively. In another words, only a quarter of the acquirers obtained the outperformance at about 10% surplus in long-term post-acquisition. From the result distribution at 90% and 95%, it can be understood that less than 10% of the developers have realized significant performance improvement such as 50% increase in the long-term after acquisition. Through the above detailed analysis, it supports the summarization result in table 5.4 that the general result of long-term post-acquisition in the sample is negative. In sum, the long-term performance of acquirers calculated by event study-BHAR method is generally decreased and even has some deviation with respect to the different benchmarks. And the benchmark 3 for the BHAR analysis has produced the best result among the three benchmarks.

Table 5-5 Detail percentiles statistic result of BHARs of acquirer

	BHAR1		**BHAR2**		**BHAR3**	
	Percentiles	Smallest	Percentiles	Smallest	Percentiles	Smallest
1%	-120.52%	-120.52%	-343.29%	-343.29%	-330.10%	-330.10%
5%	-116.01%	-116.01%	-338.78%	-338.78%	-237.00%	-237.00%
10%	-82.24%	-100.97%	-163.56%	-198.96%	-114.60%	-115.00%

25%	-43.69%	-82.24%	-47.19%	-163.56%	-64.41%	-114.60%
50%	-21.60%	Largest	-10.75%	Largest	-11.75%	Largest
75%	12.26%	56.19%	13.53%	48.98%	17.05%	35.77%
90%	56.19%	63.41%	48.98%	55.55%	35.77%	44.05%
95%	72.40%	72.40%	70.47%	70.47%	71.21%	71.21%
99%	115.15%	115.15%	81.61%	81.61%	80.14%	80.14%
Variance	0.2951433		1.028586		0.6985775	
Skewness	0.2459739		-1.70941		-1.727853	
Kurtosis	2.969681		5.5605		6.719113	

Note: BHAR1-3 refers to the explanation in the table 5.4.

5.3 RESULT OF DEA EVALUATION

5.3.1 Summary of DEA Result

The efficiency of acquirer measured by using DEA method is illustrated in table 5-6. Overall technical efficiency on average of acquirers decreased significantly from 0.93 in one year prior to acquisition to 0.74 in three years after acquisition. The lowest one is 0.72 in one year after acquisition, which means that the technical efficiency is declined sharply in short-term after the event of M&As. There is a slight increase in t+3, it shows that the technical efficiency begins to recover since the long-term effect of synergy and integration of M&As. Due to the technical efficiency is decomposed into pure technical efficiency and scale efficiency and

is equal to the product of pure technical efficiency and scale efficiency, the general trend of these two efficiency is decreasing after acquisition. Similar as the overall technical efficiency, the long-term (t+3) pure technical efficiency increased from 0.81 the sharply decline in short-term (t-1) to 0.86. However, the story is different for the scale efficiency, which drops gradually from 0.98 in t-1 to 0.85 in t+3. From the analysis result of the sample, it can be concluded that the overall technical efficiency and pure technical efficiency of Chinese real estate industry decreased after acquisition, but there are slight recover after relative long-term integration and synergy. The scale efficiency dramatically decline in both short-term and long-term, which imply that the scale economic assumption of M&As is not achieved in the sample real estate firms.

Table 5-6 Efficiency of acquirers in different periods (32 samples)

Efficiency	t-1			t+0			t+1			t+3		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Technical efficiency	0.93	0.51	1.00	0.89	0.52	1.00	0.72	0.34	1.00	0.74	0.29	1.00
Pure technical efficiency	0.94	0.54	1.00	0.95	0.63	1.00	0.81	0.45	1.00	0.86	0.49	1.00
Scale efficiency	0.98	0.91	1.00	0.94	0.62	1.00	0.89	0.57	1.00	0.85	0.44	1.00

5.3.2 Productivity Measuring Result Analysis

In line with the previous discussion of DEA-based Malmquist productivity index, therefore, if the index value is bigger than 1, it means the firms' performance improvement, and if the value less than 1, it shows the deterioration of performance. Table 5-7 provides each real estate firms' Malmquist productivity index based on average of time periods over from t-1 to t+3. According to the table 6, such 17 firms as 1,2,3,5…,27,29 and 32 have total productivity increase, as which Malmquist index bigger than 1, and the remaining 15 firms like 4,6,7,8…,28 and 31 have experienced productivity decline. Among all the productivity increase firms, firm 29 is the most productivity growth one with Malmquist index 2.24. As has been discussed above, the Malmquist TFP change is divided into technical efficiency change and technical change and equal the product of these two indexes. Furthermore, technical efficiency change is decomposed into pure technical efficiency change and scale efficiency change. Malmquist index of firm 29= technical efficiency change* technical change=1*2.24=2.24., and Technical efficiency change= pure technical efficiency change * scale efficiency change= 1*1=1. Therefore, it can be interpreted that the productivity growth of firm 29 after acquisition are induced by the considerable technical improvement, which implies

that through acquisition the firm's fixed assets and technical quality improves significantly. The firm 29's technical efficiency change, pure technical efficiency change and scale efficiency change are all equal to 1, which indicate that these items in firm 29 are no change during the acquisition. Oppositely, the worst performance firm in the productivity decline group is goes to firm 8 and 4 with 0.66. Both of two firms' technical efficiency change and technical change decreased dramatically after acquisition. Similarly, detail analysis can be conducted for the remaining firms based on the result in the Table 5-7.

Following the above discussion, the acquirers' Malmquist productivity index in each year is given in detail Table5-7, including three periods like from T-1 to t+0, t+0 to t+1 and t+1 to t+3. The result of productivity of acquirers in the year of deal made t+0 in compare with t-1 is illustrated in the Table 5-7. It can be seen that 17 of 32 acquirers have faced productivity decrease with Malmquist index less than 1 in year t-1 to t+0, of which firm 26 dropped most significantly to 0.25 much less than 1. Through investigating the elements of productivity, it can be detected that it has significant decline in technical efficiency (0.52) and even worse slumping in technological (0.47). The Malmquist productivity index=technical efficiency change * technical

change=0.52*0.47=0.25, and the technical efficiency change =pure technical efficiency change * scale efficiency change= 0.82*0.64=0.52. It can be interpreted that the sharply decline of technical efficiency in firm 26 is mainly caused by the dramatically fall of scale efficiency and slightly descending of pure technical efficiency. There 15 acquirers have experienced productivity improvement in the same period. Among these 15 acquirers, firm 16 had the most total Malmquist productivity index 9.87. It can be seen that the remarkable progress of firm 16 are contributed by the major upgrade of its technological, while its technical efficiency keep unchanged. It implies that firm 16 have achieved more resource in the perspective of technological through conducting acquisition.

There are 20 acquirers have achieved the productivity growth, while the other 12 acquirers have suffered the productivity reduction. Firm 25 achieved the greatest improvement of productivity with 4.22 in the period from t+0 to t+1. The firm 16 has got a marked drop in this year, the reason behind which might be that there is reverse adjustment after it experienced a sharp increase in the last year. A distinct feature can be found that there are 5 more acquirer realized the productivity advance at one year after acquisition. It can be interpreted that most of the acquirers

can achieve the strategy of productivity growth through the M&As in short-term.

The relative long-term Malmquist TFP change after M&As for Chinese real estate firms are also demonstrated in Table 5-7. Half of 32 acquirers are productivity progress, and another half acquirers are productivity fall. Among the former, firm 29 has the greatest progress with Malmquist TFP change index 9.5. Its growth of productivity is mainly promoted by the tremendous improvement of technology and the slight increase of technical efficiency. Simultaneously, both of its pure technical efficiency and scale efficiency show some progress. In contrast, firm 7 got the steepest drop with 0.33 in the latter half of acquirers. The TFP decrease of firm 7 is caused by the massive decline of technical efficiency (0.36). On part of the sharp decrease of technical efficiency, it was induced by the dramatically fall of scale efficiency (0.44).

Compared comprehensively with the mean of Malmquist TFP index of each year, the TFP have experienced the greatest progress in the year M&As deal making, but it decreased significantly in the one year after M&As making, which conflict with the general conclusion that short-term positive performance of M&As measured by event study and cash flow in previously studies

(reference). In terms of relative long-term period after M&As, the acquirers' average TFP have slight improvement. The reason behind of the TFP change can be identified from the technical efficiency change and technical change. The acquirers' technology has got the largest upgrade due to the M&As in the year of deal making, and also achieved slight increase at one year after acquisition, but it suffered a slight decrease in the long-term (three years after acquisition). In contrast, the mean technical efficiency of acquirers have marked decline in both the year of deal-making and the one year after acquisition, but get rise in three years after M&As. It is reasonable to interpret that the technology of acquirers are improved obviously through M&As in short-term due to the more commitment of resource, but its growth began to slow down in long-term as the effect of M&As on resource investment is weakened. However, the technical efficiency has decreased in t+0 and t+1 because the integration and synergy of M&As didn't achieve in short-term, but as realization of synergy and integration in long-term, the technical efficiency also got increased. Similarly, pure technical efficiency change can be interpreted in the same way like the technical efficiency change. In surprise, the scale efficiency didn't realize increase during the M&As deal of real estate industry in either short-term or long-term, which indicate

that to achieve the scale efficiency through M&As in Chinese real estate firms like our sample is unsuitable. That is consistent with the above discussed scale efficiency analysis result, but it is distinct from the existing research in other industry especially like the economic scale hypothesis of M&As, which depends on the unique feature of localization and products unmovable in real estate industry. For example, the boom or regression of real estate market in one city is hardly impact another city's real estate market operating. Developers can't use the surplus property products in A city to satisfy the strong demand of B city. Therefore, it is hardly to realize the scale efficiency when acquirer and target are not in the same market, even it still existing little effect of production synergy.

Combining these findings with the summary statistical analysis, it can be concluded that through conducting the M&As, the real estate industry firms can optimize their capital structure and improve their capacity of sustainable operation. In general, real estate developers' Malmquist TFP realizes increase. Their technology can be upgrade in the short-term of M&As, whilst their technical efficiency can be achieved progress in long-term of M&As. However, their scale efficiency can't get increase in no matter short-term or long-term period.

In summary, by adopting the DEA (Data Envelopment Analysis) to evaluate efficiency and Malmquist TFP (Total Factor Productivity) change of firms, this study analyze the effects of M&As on efficiency and productivity of real estate firms. The Malmquist TFP change indexes are decomposed into technical change and technical efficiency change. Using these indexes, this study measure each firm's and their average efficiency and TFP change in different period from one year prior to acquisition to three years after acquisition. The efficiency analysis results are consistent with the conclusion of Malmquist TFP change analysis. The real estate developers' Malmquist TFP realizes growth through M&As. Developers' technology has got increase after acquisition in short-term, but gradually reduce in long-term. Their technical efficiency suffer slight drop after M&As in short-term, but picked up in long-term. The scale efficiency of real estate firms didn't realize improvement during M&As in either short-term or long-term. Overall, this conclusion reflects the characteristics of real estate industry, and also support the most theory hypothesizes that M&As made value-enhancing, but the economic scale hypothesis.

Table 5-7 Malmquist Productivity Index of acquirers

Acquirer	Technical Efficiency Change (TEC)				Technical Change (TC)				Pure Technical Efficiency Change (PEC)				Scale Efficiency Change (SEC)				TFP Change (total factor productivity)			
	t+0	t+1	t+3	**Ave.**	t+0	t+1	t+3	**Ave.**	t+0	t+1	t+3	**Ave.**	t+0	t+1	t+3	**Ave.**	t+0	t+1	t+3	**Ave.**
1	0.88	0.75	0.86	**0.83**	0.97	1.53	1.25	**1.23**	0.93	0.72	1.06	**0.89**	0.94	1.04	0.81	**0.93**	0.85	1.15	1.07	**1.01**
2	1.12	0.65	0.73	**0.81**	0.89	2.52	1.22	**1.40**	1.10	0.69	0.94	**0.89**	1.02	0.95	0.78	**0.91**	1.00	1.65	0.90	**1.14**
3	0.62	0.99	1.23	**0.91**	1.17	1.67	1.20	**1.33**	1.00	0.81	1.23	**1.00**	0.62	1.22	1.00	**0.91**	0.72	1.65	1.47	**1.20**
4	1.12	0.50	0.84	**0.78**	0.81	0.78	0.97	**0.85**	1.03	0.52	1.13	**0.84**	1.09	0.97	0.75	**0.93**	0.91	0.39	0.81	**0.66**
5	1.00	0.58	1.35	**0.92**	0.89	2.31	0.72	**1.14**	1.00	0.59	1.45	**0.95**	1.00	0.99	0.94	**0.97**	0.89	1.34	0.98	**1.05**
6	0.72	1.48	1.00	**1.02**	0.92	1.14	0.58	**0.85**	0.81	1.28	1.00	**1.01**	0.89	1.16	1.00	**1.01**	0.66	1.69	0.58	**0.87**
7	0.77	1.30	0.36	**0.71**	0.87	1.43	0.91	**1.04**	1.00	1.00	0.82	**0.94**	0.77	1.30	0.44	**0.76**	0.67	1.86	0.33	**0.74**

8	1.00	1.00	0.59	**0.84**	1.29	0.64	0.58	**0.79**	1.00	1.00	0.83	**0.94**	1.00	1.00	0.71	**0.89**	1.29	0.64	0.34	**0.66**
9	1.00	1.00	1.00	**1.00**	1.07	1.13	1.70	**1.27**	1.00	1.00	1.00	**1.00**	1.00	1.00	1.00	**1.00**	1.07	1.13	1.70	**1.27**
10	1.00	0.76	0.64	**0.79**	1.30	1.13	1.34	**1.25**	1.00	0.78	0.74	**0.83**	1.00	0.97	0.87	**0.94**	1.30	0.85	0.86	**0.98**
11	1.20	0.86	0.78	**0.93**	0.92	1.22	0.93	**1.01**	1.20	0.87	1.02	**1.02**	1.00	0.98	0.76	**0.91**	1.09	1.05	0.72	**0.94**
12	1.06	0.84	0.74	**0.87**	1.13	0.98	1.24	**1.11**	1.05	0.81	0.98	**0.94**	1.01	1.03	0.75	**0.92**	1.19	0.82	0.91	**0.96**
13	0.89	0.88	1.29	**1.00**	0.98	1.75	0.63	**1.03**	1.00	1.00	1.00	**1.00**	0.89	0.88	1.29	**1.00**	0.87	1.54	0.82	**1.03**
14	1.00	0.64	0.97	**0.85**	1.81	1.27	1.21	**1.41**	1.00	0.86	1.17	**1.00**	1.00	0.75	0.83	**0.85**	1.81	0.82	1.17	**1.20**
15	0.97	0.42	2.44	**1.00**	0.86	2.47	0.61	**1.09**	1.00	0.45	2.21	**1.00**	0.97	0.94	1.10	**1.00**	0.83	1.04	1.49	**1.09**
16	1.00	1.00	0.85	**0.95**	11.15	0.00	0.58	**0.74**	1.00	1.00	0.98	**0.99**	1.00	1.00	0.86	**0.95**	9.87	0.00	0.49	**0.70**
17	1.00	0.70	1.42	**1.00**	0.70	1.66	1.23	**1.13**	1.00	0.88	1.14	**1.00**	1.00	0.80	1.25	**1.00**	0.70	1.17	1.75	**1.13**
18	1.07	0.80	0.84	**0.90**	0.96	1.38	1.36	**1.22**	1.07	0.92	0.81	**0.93**	1.01	0.87	1.04	**0.97**	1.04	1.11	1.14	**1.09**

19	1.12	0.64	0.79	**0.83**	1.11	1.49	0.93	**1.15**	1.17	0.80	0.99	**0.97**	0.96	0.81	0.80	**0.85**	1.24	0.96	0.74	**0.95**
20	1.00	0.98	0.56	**0.82**	0.86	1.76	1.08	**1.18**	1.00	1.00	0.68	**0.88**	1.00	0.98	0.83	**0.94**	0.86	1.72	0.61	**0.97**
21	1.00	0.60	1.67	**1.00**	0.63	1.30	0.98	**0.93**	1.00	0.62	1.62	**1.00**	1.00	0.97	1.03	**1.00**	0.63	0.78	1.65	**0.93**
22	0.73	0.79	1.27	**0.90**	0.48	1.25	0.90	**0.81**	1.00	0.66	1.14	**0.91**	0.73	1.19	1.11	**0.99**	0.35	0.98	1.15	**0.73**
23	1.00	0.91	1.05	**0.99**	0.88	1.27	1.22	**1.11**	1.00	1.00	1.00	**1.00**	1.00	0.91	1.05	**0.99**	0.88	1.16	1.28	**1.09**
24	1.41	0.68	1.20	**1.05**	0.93	1.34	1.06	**1.10**	1.35	0.69	1.19	**1.04**	1.04	0.98	1.01	**1.01**	1.31	0.91	1.28	**1.15**
25	1.00	1.00	1.00	**1.00**	0.84	4.22	0.57	**1.27**	1.00	1.00	1.00	**1.00**	1.00	1.00	1.00	**1.00**	0.84	4.22	0.57	**1.27**
26	0.52	1.02	1.75	**0.98**	0.47	1.88	0.63	**0.83**	0.82	1.09	1.09	**0.99**	0.64	0.93	1.60	**0.98**	0.25	1.91	1.11	**0.81**
27	1.01	0.61	2.91	**1.21**	0.86	1.95	0.49	**0.94**	1.09	0.88	1.67	**1.17**	0.92	0.69	1.75	**1.03**	0.87	1.19	1.43	**1.14**
28	1.00	0.62	1.04	**0.87**	1.16	0.88	1.12	**1.05**	1.00	0.92	0.89	**0.94**	1.00	0.68	1.16	**0.92**	1.16	0.55	1.16	**0.91**
29	1.00	0.76	1.32	**1.00**	1.87	0.83	7.23	**2.24**	1.00	0.89	1.12	**1.00**	1.00	0.85	1.17	**1.00**	1.87	0.63	9.51	**2.24**

30	1.17	1.00	1.00	**1.05**	1.08	1.19	0.94	**1.06**	1.15	1.00	1.00	**1.05**	1.01	1.00	1.00	**1.00**	1.26	1.19	0.94	**1.12**
31	0.83	1.01	0.86	**0.90**	0.98	1.20	1.10	**1.09**	0.81	1.24	0.85	**0.95**	1.02	0.82	1.01	**0.95**	0.81	1.22	0.94	**0.98**
32	1.00	0.44	1.55	**0.88**	1.12	3.05	0.93	**1.47**	1.00	0.50	1.85	**0.97**	1.00	0.89	0.84	**0.91**	1.12	1.34	1.44	**1.29**
Mean	***0.96***	***0.79***	***1.03***	**0.92**	***1.31***	***1.03***	***0.99***	**1.10**	***1.01***	***0.83***	***1.07***	**0.97**	***0.95***	***0.95***	***0.96***	**0.95**	***1.26***	***0.81***	***1.02***	**1.01**

Note: If the TFP change index is larger than 1, then productivity in increasing, otherwise it implies a decline; Index in t+0 is based on a comparison with t-1, t+1 is based on t+0, and so on; Ave. means the average value of the index during the t-1 to t+3 periods. Mean represents the average value of the entire sample in the same period.

5.4 COMPARATIVE ANALYSIS OF TWO EVALUATION METHODS

In the previous content, acquirers' long-term performances are evaluated by using event study and DEA-based Malmquist productivity index methods. To identify the effectiveness of these evaluation methods, the long-term performances of acquirers in post-acquisition measured by the two methods are compared in this section. Two types of comparison analysis are made to detect the similarities and differences between the event study result and Malmquist productivity analysis result in this section. First of all, the performances evaluated by different are directly compare with each other according to the standard of improvement or reduction of performance. In the event study method-BHAR, if result of BHAR is bigger than zero, it means the performance is improved after acquisition in long-term, or else the performance is decreased. On the part of Malmquist productivity index analysis, if the index result is larger than 1, it implies that the acquirers' performance are enhanced in long-term of post-acquisition, or vice verses. The comparison result is equal to 1 when performances evaluated by two methods are consistent with each other, or else is 0. The comparison results in this method are shown in the table 5-8. The

second comparison approach is to analysis the degree of consistency between different evaluation methods by conducting correlation analysis among the performances assessed by these methods. The correlation coefficient represents the consistency relationship of different methods. The correlation analysis result is presented in the table 5-9. The remaining part of this section provides the detail description and analysis of the comparison result of these two methods.

From the directly comparing result as shown in the table 5-8, it provide three BHAR results (BHAR1,BHAR2, and BHAR3) based on three different benchmarks, say shanghai Shenzhen exchange index, property index, and control firms, and the DEA-based Malmquist productivity index analysis result firstly. Both of these performances are calculated base on acquirers operation in the three years after acquisition effectively. The last three column of the table 5-8 present the comparison result between the BHAR1 and TFP, BHAR2 and TFP, and BHAR3 and TFP respectively. The comparison of these three pairs is conducted individually one by one for the entire sample. The comparison result is one or zero, which depend on the performances from two methods are consistency or not. Finally, the last row of the table5.8 sums the result of the comparison. The number of the sum result means the

number of firms with the consistency performance in each comparison pair. The number of firms with consistency performance under the pair of comparison between BHAR3 and TFP is the largest one among all of the three comparison pairs. There are 22 out 32 sample firms or about 70% of sample with consistency performance when comparing BHAR3 with TFP, while the number of consistency performance firms in comparison BHAR1&TFP and BHAR2&TFP are 18 and 19 respectively. It is can be understood that the BHAR method with using control firms as benchmark and DEA-based Malmquist productivity index method have similar efficiency when they are adopted to evaluate the long-term post-acquisition performance of acquirers in real estate industry. It verifies that using control firms as benchmark (benchmark3) in BHAR method can achieve the best result among all of the three benchmarks as mentioned in previous content. The comparison results also demonstrate that the proposed DEA-based Malmquist productivity index can be appropriate for measuring the long-term performance of M&As and also can achieve desirable result.

Table 5-8 Comparison between BHAR results and TFP result

Acquirer	BHAR1	BHAR2	BHAR3	TFP Change Ave. (t+3)	Comparison (TFP VS B1)	Comparison (TFP VS B2)	Comparison (TFP VS B3)

1	9%	-149%	80%	1.07	1	0	1
2	-40%	-48%	-8%	0.9	1	1	1
3	-16%	-199%	-330%	1.47	0	0	0
4	-101%	-164%	-115%	0.81	1	1	1
5	-67%	-17%	10%	0.98	1	1	0
6	-40%	-97%	-65%	0.58	1	1	1
7	-121%	-343%	-64%	0.33	1	1	1
8	115%	70%	-102%	0.34	0	0	1
9	63%	56%	44%	1.7	1	1	1
10	-47%	1%	-58%	0.86	1	1	1
11	-82%	-125%	-237%	0.72	1	1	1
12	-19%	-9%	-15%	0.91	1	1	1
13	-30%	-38%	-73%	0.82	1	1	1
14	18%	24%	-8%	1.17	1	1	0
15	-39%	-27%	6%	1.49	0	0	1
16	15%	26%	-25%	0.49	0	0	1
17	-24%	-13%	-53%	1.75	0	0	0
18	-21%	-11%	29%	1.14	0	0	1
19	51%	18%	18%	0.74	0	0	0
20	72%	82%	71%	0.61	0	0	0
21	-37%	-24%	-49%	1.65	0	0	0
22	-23%	-10%	18%	1.15	0	0	1
23	8%	11%	36%	1.28	1	1	1
24	-51%	-43%	-45%	1.28	0	0	0
25	-6%	-4%	-97%	0.57	1	1	1
26	55%	14%	-4%	1.11	1	1	0
27	-4%	7%	14%	1.43	0	1	1
28	-27%	-6%	16%	1.16	0	0	1
29	-6%	14%	-2%	9.51	0	1	0
30	-58%	-46%	-25%	0.94	1	1	1
31	-116%	-339%	-115%	0.94	1	1	1
32	56%	49%	35%	1.44	1	1	1
Total number of consistent result					18	19	22

Note: If the value of BHAR is bigger than 0, it means that acquirer's performance are improved during three years after the acquisition. If the value of TFP change in t+3 is larger than1, it implies that acquirer's performance got enhanced in the three years of post-acquisition, and vice versa. Comparisons are made between the TFP change and the BHAR result under each of the benchmark. If the results from above two methods are consistent with each other, the value of the comparison is equal to 1, or else is 0.

Another approach for comparing the long-term performances measured by BHAR and TFP is correlation analysis. Correlation coefficient (r) is a statistic value for measuring the strength of a

supposed linear association between two variables. Herein, it is used to analyze the relationship between different performances. The analysis results are shown as the table 5-9. As seen from table 5-9, all of the correlation coefficients are positive, which means that all of performances move in the same direction. For the BHAR method, the performance evaluation result based on benchmark1 (shanghai Shenzhen exchange index) have moderate correlation with the performance under benchmark2 (property index), but have no correlation with the performance measured by the benchmark3 (control firms), and performance based on benchmark2 also have no correlation with the performance under benchmak3. In term of the performance measured by TFP method, it has no correlation with the performance evaluated by all of the benchmarks in BHAR methods. It demonstrates that the BHAR of acquirers based on the benchmark3 or control firms and the TFP index of acquirers are independent, but acquirers' BHAR upon the benchmark1 (Shanghai Shenzhen exchange index) and benchmark2 (Property index) are correlative with each other.

Table 5-9 Correlation analysis of BHAR and TFP

Correlation	BHAR1	BHAR2	BHAR3	TFP Change Ave. (t+3)
BHAR1	1			
BHAR2	0.7414	1		
BHAR3	0.3713	0.5062	1	
TFP Change Ave. (t+3)	0.0507	0.1436	0.1065	1

Note: TFP is the abbreviation of "total factor productivity".

In summary, on the basis of the above analysis, it can be concluded that BHAR method using control firms as benchmark are outperformance than the same method by benchmarking the Shanghai Shenzhen exchange index and property index. Furthermore, DEA-based Malmquist productivity index method has produced the very consistency result as the BHAR method based benchmark3. It illustrated that the DEA-based Malmquist productivity index method proposed in this study are suitable to be used as evaluation method for the long-term performance of post-acquisition. It provides a complementary for the M&As performance measurement theory. In another word, it offers an option for measuring M&As performance in addition to the event study and avoids the limitation of event study simultaneously.

5.5 ANALYSIS OF FACTORS AFFECTING ACQUIRER'S LONG-TERM PERFORMANCE

In the section 4.4.1, factors that might affect the performance of M&As are proposed based on extensive literature review. Their effects on the acquirers' long-term performance after acquisition are tested in this section through regression analysis. As mentioned

in previously, the proposed factors can be classified into two categories for reflecting firm and deal characteristic. The regression results are presented as the following table 5-10 (deal characteristic) and table 5.11(firm characteristic) accordingly. Most of the proposed factors are tested and included in the table 5.10 and table 5.11, but some factors are excluded in the regression analysis according to the specific feature of the sample. The omitted factors include like industry characteristic, accounting method, tax saving and hubris variables etc., which are not suitable to be analyzed in the study. For example, as all of the acquirers are from the real estate industry, therefore, the industry characteristic for all of acquirers are similar, and the impact of these variables on the performance are no need to consider in this study. Additionally, due to the different between the Chinese accounting methods and the international methods, some indicators are also omitted in the study. Also, intangible assets like brand, R&D or license of the target in the sample has weak influence on the performance of real estate developers. Through dropping these unsuitable factors in this study, it can improve the regression result for the sample. But these factors should be analyzed in the future studies as the sample increased and M&As market developed. The details of the regression result are discussed in the following.

Deal characteristic indicators' regression results are presented in the table 5.10. As most of these indicators are classified variables, the regression with indicator variables is need to conduct when make regression of long-term performance on these variables. To avoid perfect col-linearity with the constant term, one of the indicator variables must be omitted when running a regression on each group of indicator variables. Despite one of indicator variable must drop from the regression, the choice of the dropped variable is arbitrary and will not affect the statistical judgments. It can be understood that the remaining variables regression coefficient are based on the comparing with the omitted variable, which is can be regarded as benchmark variable. From table 5-10, the performances of M&As deals through tender are better than that of deals through agreement or negotiation in BHAR method under both benchmark2 and benchmrk3. That is consistent with the previous studies' conclusion that bid or tender M&As can obtain good performance in long-term than negotiation deals. But it gets opposite result in TFP and BHAR1 methods. The inconsistent result might be induced by the reason that the most of the M&As in Chinese real estate industry are conducted via agreement or negotiation and very few of M&As cases are made through bid or tender especially in the sample. In terms of the related/unrelated

(diversified) between the acquirer and target, the long-term post-acquisition performance of related M&As are outperformance than that of the diversified M&As in both BHAR and TFP methods. It implies that developers can achieve better long-term performance through acquiring related target as the realization of economic of scale and synergy of business. Even most of the M&As deals in real estate industry are paid by cash, the deals using stock swap as payment obtained the best long-term performance among all payment methods in all of the evaluation methods except the BHAR3. Growth acquirers have achieved better performance than value acquirers in the sample no matter what kind of evaluation method applied. It is inconsistent with the existing studies' argument that value acquirers might realize better performance in long-term. The reason behind the inconsistent is that as real estate industry in China in its stage of boom, growth acquirers can achieve growth through quickly expansion in economic scale & business scope, and penetration in different regional markets. Regarding to the impact of governance structure on the post-acquisition performance, due to the specific governance feature of Chinese list companies like untradeable share and state-owned shares, the analysis result have the following specialty. M&As deals with related chair have produced the higher long-term

performance than that of with unrelated chair in all BHAR. But the results under TFP method are totally different from BHAR method, which is consistent with previous research result that unrelated chair can provide better governance for the operation and M&As. M&As deals with independent board get higher performance than un-independent board assessing by BHAR1 and BHAR2, but opposite result appeared when measured the performance by using BHAR3 and TFP. On the parts of the ownership of director, when director hold 5-25% of share, M&As performance are the best in BHAR result. While using TFP method, the best performance appears only when the director's ownership is higher than 25%. It means that the higher ownership controlled by directors the better long-term performance of M&As achieved in real estate industry. That can be explained by agency theory: the higher ownership hold by directors the low agency problem exist and the directors' interest are consistent with the shareholders, therefore, they conducted M&As deals for the purpose of value enhancement but not for their hubris ambition. Blockholder's ownership has the similar feature as the directors, percentage of its ownership range from 10%-25% obtained best performance after acquisition when evaluated by the BHAR method, while using TFP method, the best performance of post-acquisition go to the blockholders with control

more than 50% share. However, the executive's ownership doesn't obey the same discipline as the directors' and blockholders ownership. Higher ratio of executives' ownership has obtained better performance in BHAR1 and BHAR2, but opposite results was produced by the BHAR3 and TFP method. The controversial result illustrate that the corporate governance is in low maturity and is still have big space to improve especially for Chinese real estate industry firms. The M&As will upgrade the corporate governance rapidly and its performance will be improved under better corporate governance in return.

Table 5-10 Deal characteristic factors affecting acquirers' performance

Deal characteristics indicators	sub-categories	BHAR1	BHAR2	BHAR3	TFP (t+3)
Tender or agreement	Agreement	0.5220	-0.2500	-0.4600	0.3219
	Tender	omitted	omitted	omitted	omitted
Related/unrelated	Related	0.6320	0.5420	0.3450	0.6810
	Unrelated	omitted	omitted	omitted	omitted
Payment methods	Cash	0.0294	0.0927	-0.1421	0.0974
	Stock	0.4324	0.8086	-0.1531	1.2477
	other/mixes	omitted	omitted	omitted	omitted
Growth/value acquirers	Growth	0.3918	1.2461	0.1018	0.9407
	Value	omitted	omitted	omitted	omitted
Chair is related	Related	0.4575	0.8328	0.6701	-0.5673
	Unrelated	omitted	omitted	omitted	omitted
Board independence	Non-independent	-0.6225	-0.6194	0.5596	0.7593
	Independent	omitted	omitted	omitted	omitted
Director ownership	< 5%	0.0815	-0.3232	0.1928	-0.4438
	5-25%	0.1052	0.0521	0.1944	-0.8950
	>25%	omitted	omitted	omitted	omitted
Executives' ownership	<5%	-0.0080	-0.3558	0.4332	0.1407
	5-25%	omitted	omitted	omitted	omitted
	>25%	0	0	0	0
Blockholder ownership	<10%	-0.1034	-0.0316	0.4427	-1.4939

(State ownership	10-25%	0.2578	0.4298	0.7801	-1.2433
	25-50%	-0.4481	-0.6020	0.3648	-1.5000
	>50%	omitted	omitted	omitted	omitted

Note: The factors explanation can refer to the table5.2. The long-term performances of acquirers measured by different methods are conducted regression on each of the indicator variables. In the regression with indicator variables, one variable must be dropped to avoid the perfect col-linearity with the constant term. The variables marked with "omitted" is the dropped variable, which provide a reference for the other variables in regression. Actually, the coefficients produced by the regression are the difference between the each variable's mean performance and that of the dropt variable.

The second issue of this section is to analyze the impact of firm's indicators on the long-term performance after acquisition. The regression result of performance on the firm indicators are illustrated in the table 5-11. The regression analyses are also identification the effect of each firm's characteristics variables on four different long-term performances say BHAR1, BHAR2, BHAR3 and TFP respectively. As the table5.11 shows, target's cash and growth opportunities have slightly effect on the performance of M&As regardless of negative or positive impact. In this item, the BHAR3 are consistent with the TFP result, both of which are negative regression coefficient. While the BHAR1 and BHAR2 have the positive coefficient. Target's debt level also has weak influence on the long-term performance of M&As in real estate industry. That's might be because the relative small size of targets as compared to acquirers. The debt level of target has positive impact on both TFP and BHAR2 performance, but it has negative effect on BHAR1 and BHAR3. In term of target

managerial efficiency, target's returns on equity have positive effect on the M&As long-term performance in all evaluation method except BHAR1. Similarly, target's return on assets can also positively impact on the performance of M&As in both BHAR2 and TFP despite the negative in BHAR1 and BHAR3. It indicates that the stronger profitability of target will obtain better post-acquisition performance. There is controversy in target's managerial variable Tobin's Q which means that lower level of Tobin's Q (less than 1) indicator inefficient management of target. Despite the Target's Tobin's Q has negative impact on TFP and BHAR3, and positive effect on the BHAR1 and BHAR2, all of these influence are very weak. Cash hold by the target is an important motive of M&As for real estate industry firms. The regression result also testified this point. The higher level of cash owned by target the better performance of acquirer will obtains after acquisition in all of method except the BHAR3. The regression coefficient of different financial leverage between target and acquirer in both BHAR3 and TFP are minus value, but opposite result achieved in BHAR1 and BHAR2. However, both positive and negative coefficients are very small. It implies that the variable of different financial leverage is not the main factor considered in the M&As by developers. On the parts of the

acquirer characteristic variables, the result shown in table 5.11 illustrate that acquirer's cash and growth opportunities are positive correlate with the performance of M&As measured by all methods except BHAR1. The regression coefficients of acquirers' debt are larger than zero on the BHAR3 and TFP, but it less than zero on the BHAR1 and BHAR2. The above two variables regression result implies that acquirers with less agency problem can achieve better long-term M&As performance in real estate industry. It verifies that the agency theory can effectively explain the M&As phenomenon in real estate industry. The last important indicator of acquirer considered is the acquirer's experience of M&As previously.

In summary, through regression analysis, the factors affecting performance of M&As are identified. Some of these factors can be explained by the general theory in M&As domain, and others reflect the features of M&As activities especially in the Chinese real estate industry. It provides a valuable reference for the future M&As deals making in Chinese real estate industry. When make a M&As decision, some critical influence indicators should be considered seriously to make sure the realization of improvement of long-term performance after acquisition.

Table 5-11 Firm indicators affecting long-term performance of M&As

Theory	Explanation	Firm indicators	BHAR1	BHAR2	BHAR3	TFP(t+3)
Efficiency theory	Correcting an agency problem in the target	Target's cash and growth opportunities (C&G)	0.0052	0.0187	-0.0159	-0.0277
		Target's level of debt	-0.0042	0.1157	-0.0527	0.0879
	Reducing target's management inefficiency	Target's return on equity (ROE)	-0.6486	0.8298	0.4834	0.1223
		Target's return on assets (ROA)	-0.1441	2.3148	-1.2481	0.7017
		Tobin's Q:	0.0111	0.0336	-0.0140	-0.0301
	Financial synergy	Target's level of cash	0.0230	0.1516	-0.0221	0.1054
		Arithmetic difference between the acquirer and target's financial leverages	0.0002	0.0007	-0.0011	-0.0022
Behaviors theory	Agency	Acquirer's cash and growth opportunities	-0.1879	0.3418	0.2482	0.0388
		Acquirer's level of debt	-0.0096	-0.0077	0.1150	0.1565
	Multiple acquisitions	Acquirer involved in acquisition in previous 3 years	-0.0708	0.0063	0.4013	-0.5202
		First time acquisition	Omitted	Omitted	Omitted	Omitted

Note: The impact of firm factors on long-term performances of acquirers are analysed through regression analysis. Low levels of Tobin's Q, which means less than one, would suggest that the firms existing management inefficiency. (Low levels of Tobin's Q for the target and High levels of Tobin's Q for the acquirer)

CHAPTER 6. CONCLUSIONS

6.1 OVERVIEW

This chapter summarizes the research findings along with the research aim, objectives, research methodologies and results. The research findings are achieved on the basis of the three aspects of M&As investigated within the Chinese real estate context. These three aspects contain a selection of the evaluation indicators, long-term post-acquisition performance evaluation and factors affecting analysis. Research findings illustrate that the long-term performance of Chinese real estate acquirers were negative, on average, no matter whether they were measured by either BHAR or TFP methods. Then, the study investigated the factors affecting the long-term performance of acquirers after M&As. In line with the research findings and the features of the Chinese real estate industry's M&As, guidelines for M&As transactions are provided that aim to improve future M&As execution in the real estate industry. As far as the author knows, this study is the very first research on M&As phenomenon in the Chinese real estate industry. Therefore, a great many issues still remain to be discussed in this research area. In this study, some factors were omitted in the process of analysis as result of the constraints imposed by the

sample. Hence, these factors should be investigated in the future studies to complement the finding of this study. Finally, to avoid the limitations of this study, a possible future research agenda and some areas of focus are recommended to improve the success of M&As in the Chinese real estate industry.

6.2 SUMMARY OF RESEARCH FINDINGS

These sections conclude the overall research findings of this study. First, the background of M&As in the Chinese real estate industry is described. Second, the research methodologies adopted in the study are presented, which include the sample selection and data collection, evaluation indicators establish, performance evaluation methods description. Third, the results of long-term M&As performance analysis, which measured by the buy-and-hold abnormal return (BHAR, event study) method and DEA-based Malmquist total factor productivity (TFP) index method, are presented and compared with each other. Finally, the factors affecting the long-term performance are investigated. The summary of each of above four aspects are presented as follows.

6.2.1 M&As Activities in the Chinese Real Estate Industry

The development trend of M&As activities in the Chinese real

estate industry are consistent with that of the overall Chinese M&As market. Both the M&As deal value and deal number in Chinese real estate industry have increased since the 1990s. In particular, the numbers of M&As have increased sharply in the last decade. Furthermore, the real estate industry has grown into one of the most active businesses in the Chinese M&As market. Surprisingly, there are rarely studies that have investigated the M&As phenomena in Chinese real estate industry. Consequently, little knowledge about M&As in real estate industry has been accumulated. Therefore, this study aims to analyze this new trend of M&As appearing in the real estate industry. With an understanding the specific features of Chinese M&As markets and combined with the context of the real estate industry, this study analyzed the potential motives of M&As for developers firstly, and then evaluated the long-term performance of developers' M&As to investigate whether M&As activities enhance the developers' value or not. Finally, the critical factors affecting the performance of M&As have been identified to provide guidance for future M&As in the real estate industry.

This part of the content is described in chapter 3. The overall M&As in the Chinese market are summarized firstly. Then their specific features are described, which includes the details of

Chinese corporate governance that influence the M&As deal structure directly. Another important component of chapter 3 is the introduction of the M&As situation in the Chinese real estate industry. First of all, it presents the characteristics of Chinese real estate market like the land administration system, and development status of the market. That determines the aims and deal structure of M&As in the real estate industry. These specific features of the Chinese real estate industry market, like the government's macro-adjustment regulation, financing channel condensation and industry restructure and consolidation have induced a dramatic increase of M&As transactions in the real estate industry. The motives of M&As in the Chinese real estate industry include: economic scale expansion, land acquisition and financial channel access. Finally, to accomplish an M&As deal in the real estate industry, share acquisition and asset acquisition are two of the most frequently adopted methods in the Chinese real estate industry.

6.2.2 Research methodologies establishment

To accomplish the research aims of the study, a reasonable research methodology is the general prerequisite. The research methodology is introduced in chapter 4. First of all, according to the five screening principles such as industry, deal status, data assessable

and others, finally, 32 M&As cases, as conducted by the real estate industry listed firms, were selected as the sample for the research. Then, two types of performance evaluation methods were proposed to measure the long-term performance of post-acquisition entities. The first type of M&As performance measurement method is event study, which is the most commonly used method in M&As research arena. Buy-and-hold abnormal return (BHAR), as one of the most frequently adopted method in event study, was used in the study to assess the long-term performance of acquirers by comparing against three benchmarks. These three benchmarks include Shanghai & Shenzhen Exchange index, Property index and control firms respectively. Another method proposed in this study was the DEA method, which include DEA efficiency estimation and DEA-based Malmquist total factor productivity index methods. The strength of these two methods can avoid the limitation of the event study approach. Hence, they are suitable to be used to evaluate the performance of M&As.

To measure the performance of M&As and analyze the influence of each variable on the performance, indicators were also set up in this chapter. The indicators were established based on two aspects. On the one hand, the indictors were drawn from the perspectives of motivation of M&As and explanation theories of M&As. On the

other hand, some indicators were selected to evaluate the efficiency of developers on the basis of Michael E. Porter's five forces theory.

6.2.3 Analysis of long-term M&As performance

In accordance with the content in the previous section, the long-term performances of acquirers were evaluated by event study and DEA method respectively. The evaluation results are presented in chapter 5. Regarding to the event study, the long-term performances of acquirers calculated by BHAR method are generally decreases, on average, despite there are some deviations with respect to the different benchmarks. And the result illustrates that the benchmark 3 for the BHAR analysis has produced the best result among the three benchmarks. In terms of the DEA study, the results of the analysis show that developers' M&As are associated with: a negative effect on developer performance; a steady growth in developer Malmquist TFP experiences; a more progressive adoption of technology immediately after acquisition; and a slight short-term decrease in technical efficiency after acquisition followed by a marked increase in the longer term once the integration and synergy benefits involved are realised. However, there is no evidence that developers achieve any short or long term

scale efficiency improvements after M&As.

The comparative analysis is conducted followed by the discussion of the long-term performance measurement. The comparison result demonstrates that BHAR method by using control firms as benchmark (benchmark3) can obtain a better result than the other two benchmarks, say Shanghai & Shenzhen index and property index. The comparison results also illustrate that the proposed DEA-based Malmquist total factor productivity index method can be appropriate for measuring the long-term performance of M&As and also can achieve desirable results.

6.2.4 Discussion of Key Affecting Factors

Affecting factors analysis is another important issue of this study. The analysis result is also presented in the chapter 5. To facilitate an understanding the characteristics of indictors, the proposed factors are classified into two categories for reflecting the respective firm and deal characteristics. Their impact on the long-term performance is investigated through regression analysis. Some of the candidate factors are omitted in the analysis due to the constraints imposed by the sample. The analysis results of some factors obey the general explanation of M&As theories. Other factors analysis results reflect the specific characteristics of the

Chinese real estate industry. Some important conclusions of regression analysis result about affecting factors include the following: The long-term performance of related M&As are better than that of the diversified M&As in both BHAR and TFP methods; Growth acquirers obtained better performance than value acquirers in the sample; The higher level of cash owned by the target the better performance of acquirer will be obtained after acquisition; Target's profitability like target's returns on equity and return on assets have a positive effect on the M&As long-term performance; and acquirer's cash and growth opportunities are positively related with the long-term performance of M&As.

6.3 GUIDELINE FOR THE REAL ESTATE INDUSTRY

In order to present M&As guidelines for the Chinese real estate industry, this section presents implications drawn from the combination of the result of the research with the characteristics of the Chinese real estate industry and general M&As theory and practice experience. The research findings of this study could benefit the future M&As practice in the real estate industry. Despite the research results showing that, on average, real estate industry acquirers' performance did not improve or their

Malmquist productivity did not increased significantly, more and more real estate firms are involved in the M&As activities under many different motivations during this wave of M&As. Accordingly, it is necessary to provide guidelines on the basis of the summarization of the experience and lessons from the past M&As practice for guiding the real estate industry firms future M&As activities.

6.3.1 Related Acquisition

The related businesses between acquirer and target have a positive correlation with the long-term performance of M&As from the findings of this study. Many previous studies have also reached a similar conclusion. Therefore, business 'relatedness' is an important consideration for real estate industry firms, which could be conducive to enhance the core competency of the acquiring developers. Similar to Barney's (1988) statement, the abnormal returns can be achieved only when acquirers get uniquely valuable synergies from targets. However, a developer might seek to expand economic scale or business scope through unrelated M&As depending on the status of it. Also, an acquirer might increase another profitable business line aimed at balancing its revenue stream by taking over a target which has an opposite business

cycle. Moreover, if an acquirer identifies a target only because it is cheap but without considering the strategic goal for the deal, it might damage profits of both acquirer and target. Consequently, strategic considerations are needed in making decisions of M&As in addition to the analysis of the business related.

6.3.2 Due Diligence

In the negotiation phase which is a long period from announcement to completion date, acquirers or their advisors conduct a detailed probe of the targets' historic performances, current operational status and its future growth potential. The investigation procedure is known as due diligence. As the findings of this study demonstrate, that the target's level of cash and profitability do contribute to enhance the long-term performance of the M&As entity, and it is necessary to investigate these sort of possible synergy gains clearly before deal completion during due diligence. However, a larger number of M&As deals were completed rapidly in the real estate industry. Their negotiation process is compressed into very short period. It implies that real estate firms find it is hard to conduct detailed due diligence for all of the aspects about targets in such a short period. As commented by Maxwell (1997), "a great number of M&As transaction fail because of hasty and incomplete

due diligence, resulting in a poor understanding of status of target.'' Hence, in order to make sure the success of a deal and reduce the risk of post-acquisition performance, a detailed due diligence should be conducted prior to the transaction completion in the future real estate M&As.

6.3.3 Effective Operation Strategy

This study also identified that acquirer's cash and growth opportunities are positively related with the long-term performance of M&As. It implies that the effective operation strategy of the acquirer can enhance the success of M&As in the real estate industry. As explanation of agency theory, if agency problem do exist in an acquirer, the agent (the manager) will be motivated by self-interest and act at the expense of the shareholders (Baiman. 1990). Under this situation, the M&As deals might be conducted for chasing the interests of agents (managers) but not for that of shareholders. These kinds of M&As are hard to ensure a good long-term performance after acquisition. To overcome this problem, an effective operation strategy should be formulated for maximizing shareholder value. One of the important tools for that is to establish effective corporate governance. An effective corporate governance mechanism is a set of supervising, appraisal,

stimulating and restriction systems, which will reduce the agent problem to a minimal degree. Based on the robust system of corporate governance, further effective corporate operation strategy could be formulated for the interest of shareholders and sustainable development of the corporation. Both the corporate governance and operation strategy of Chinese real estate firms still have room for improvement. That is conducive not only to the enhancement performance of M&As, but also to the improvement success of any other operation strategies.

6.3.4 Takeover Timing

In terms of the takeover timing, it is generally understood that real estate industry development is significantly influenced by the economic conditions and government's macroeconomic policies and regulations. The fluctuation of economic conditions and adjustment of governance policies and regulations will induce the real estate market volatility. Therefore, the developers should pay close attention to the exchanges of the firm's external environment such as fluctuations of market and economic environment. In line with the developers' external environment and features of M&As, the operation strategy should be planned and formulated meticulously to mitigate the risk of market fluctuation and to turn

it into a development opportunity for developers. Such as, when under attack by a storm of recession, some developers are driven into bankruptcy, but others see it as a great opportunity for expansion via M&As. Therefore, the selection of takeover timing is an important issue for realization of the anticipated strategic goals, which requires thorough consideration by combining M&As with corporate strategy. Developers are recommended to re-evaluate the external market environment and review their strategy regularly to guarantee application of timely and appropriate strategy such as M&As to survive in the fiercely competitive business environment.

6.4 RESEARCH SIGNIFICANCE AND CONTRIBUTIONS

This section presents the significance of this study from perspective of an academic domain and the contribution to the knowledge of real estate industry M&As practice.

Firstly, from proposing the research idea to drawing conclusions, a variety of academic disciplines were encompassed in this study. This study began with observing the M&As activities in the Chinese real estate industry; then real estate business performances were evaluated based on the traditional event study and proposed

DEA methods. Finally, the factors affecting the performance of M&As in the Chinese real estate industry are identified. As far as the author knows, this is the very first study to focus on Chinese real estate industry acquiring firms, which thus represents evidence within the emerging markets with a different market environment and a different regulatory regime from traditional developed markets like the US and EU. For example, one of the most important differences between the US and China is the form of M&As antitrust regulation. Most of M&As were achieved through negotiation, and required state approval as well in China. Both tender/bid and agreement/negotiation were frequently adopted as method of making M&As deals in US. Additionally, cash payments are adopted in the majority of Chinese takeovers, whereas stock payments are used in US M&As deals (Eckbo and Thorburn, 2000; Loughran and Vijh, 1997). All in all, those differences between the US and China markets could affect the target selection process, the propensity of M&As activities, the price paid, and more importantly, the post-acquisition performance. Hence, the study will provide a complementary M&As theory for emerging markets. Secondly, performance evaluation methodologies are carefully selected in this study to ensure that results of post-acquisition performance are consistent across different choices of methodology.

Accordingly, both a traditional event study method and a DEA based method are used to mitigate the methodological problems in the study. Furthermore, the impact of deal and firms-specific factors on the long-term post-acquisition performance is identified, which provide a reference for future M&As deals in the real estate industry.

Thirdly, a comparative analysis between the long-term performances of post-acquisition evaluated by event study and efficiency exchange result measured by DEA method are conducted to examine the consistency. Previous studies about long-term abnormal return like Rau and Vermaelen (1998) assume that the market gradually reassesses the quality of acquiring firms as the result of acquisition become clearer. Similarly, this result shows that long-term performances of acquirers are decreased on average, but acquirers' total productivity has steady growth. Other efficiency exchange results of acquirers are complicated.

Finally, this study is the most comprehensive research on the M&As issues of real estate industry in the current Chinese market environment. Although the Chinese M&As activities have leaped in recent years, the studies investigating the long-term post-acquisition performance of acquirers are scarce, and even it can be regarded as one of the first studies in the real estate industry.

Thus, this study fills a large research gap in both the Chinese M&As and real estate industry arenas. Moreover, given the tremendous volume of M&As deals being made in the Chinese real estate industry, it is anticipated that many subsequent research studies will follow. Therefore, the methodologies and the findings of this study may be used as cornerstones for future research efforts.

This research contributes to the knowledge of strategic management and M&As for real estate industry firms. It may fulfill the knowledge gap of M&As theory application in the real estate industry, especially in motives and performance measuring of M&As for real estate industry firms. It also provides contributions to knowledge of the relationship between strategy motives and performance of M&As tailored specially for real estate industry firms. All in all, the findings of this research could provide scholars in the M&A research arena a valuable reference for their future study. Also, the findings of this research are constructive in practical usage, and will be of benefit to the industrial practice in dealing with M&As. The result of effective motives of M&As and scientific measuring performance of M&As transactions could help industry practitioners to conduct future M&As deals successfully. A guideline for M&As decision making

is provided for supporting the practitioner's application in M&As deals to mitigate risk of failure of transactions.

6.5 LIMITATIONS OF THE RESEARCH

Since any study has its limitations and cannot solve all aspects of a research problem completely, this study also includes several limitations. As the M&As is a very complicated issue and encompasses multiple disciplines, this study can only concentrate on a portion of the issues of M&As in the real estate industry. The overall limitations of this study are presented as follows:

In term of the event study, the relative small number of the sample is a limitation in the current study. There are 32 M&As deals conducted in the Chinese real estate industry during the period 2000-2011 that were selected as an analysis sample according to the fundamental scan principles. This problem should be solved in the future as numbers of M&As accumulate in the real estate industry. Then, the event study will be conducted more reasonably.

Regarding to the DEA method, one point should be mentioned here is that the analysis result of the study depends on the specific inputs and outputs selected in this study. Hence, it is possible to obtain similar or different results by adjusting inputs and outputs

indicators. The future studies can establish their own input and output indicators according to their research objects to achieve a more robust analysis result.

Finally, some indicators are omitted in this study when conducting regression analysis on the performance of M&As. The reason is that these variables are unsuitable or missing under the constraints of sample size and specific features of M&As within a Chinese real estate industry context. This problem will be resolved when accompanied with increasing M&As numbers in the real estate industry and the improvement of relevant regulations and policies on M&As in China.

To sum up, even with above limitation, the analysis methods proposed in this study are very useful and valid to measure the M&As performance from prospective of abnormal return, efficiency and productivity. Valuable and reasonable analysis results are achieved by applying this approach with specially tailored indicators.

6.6 FUTURE RESEARCH

As this study concentrates on a small part of various M&As issues, there are several issues left out of the research. Accordingly, other

issues on M&As not investigated in this study should be studied in the future to benefit both academia and professionals in the Chinese real estate industry. Therefore, the following issues are proposed for the future studies to replenish the knowledge of M&As for the real estate industry.

Firstly, whilst the study investigated the performance of M&As through quantitative methodologies, actually, there are many other issues that cannot be analyzed by quantitative methods easily. These dimensions include like the strategy formulation in M&As decision phase and synergy management in integration phase. However, as stated by many scholars and professionals in the M&As domain, integration management in post-acquisition phase is crucially important for realization of the anticipated performance of M&As. It encompasses a larger number of managerial issues like human resources, cultural, organization structure, business process, financial and legal etc. Therefore, in these two dimensions, there are lots of problems that should be worthwhile to analyze to expand the M&As theory under the context of the Chinese real estate industry.

Secondly, this study investigated the acquirers' long-term performance only. Actually, to dispose the unprofitable business

section and concentrate on core business, some firms might sell out of a portion of their business through divestiture or spin-off M&As (Berger and Ofek, 1996; Desai and Jain,1999). The strategies and purposes of M&As for divestiture firms are very different from that of acquiring firms. Thus, the future studies should shine a light on the M&As activities of divestiture or spin-off firms.

Thirdly, target selection is another important issue in M&As domain. To buy a target's current earnings or to acquire its future potential profitability are the two main strategy considerations for acquirers. In another words, buying a good current performance target with payment of a high level of premium or buying a poor performance target with a low price is an important question needed to be answered by real estate industry acquirers. Accordingly, in the future studies, much more attention should be paid to problems of target selection for developers.

Finally, as stated in the literature review, previous studies have investigated a large number of factors that may have effect on the performance of M&As. There is only a portion of these factors adopted in the analysis of this study. The remaining factors should be discussed in the future studies.

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