

The Influence of M&A Impact Factors on Corporate Post-M&A Performance

-- **Based on China's A-Shares Stock Markets**

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Abstract

M&A plays a critical rule in corporations, and every giant international firm has been through it. In recent years, it becomes popular in China's A-Shares Stock Markets, and has made a great impact on firm's performance and strategy. So it is essential to make a profound study on this matter.

To study this problem, 31 industrial M&A cases are chosen from 2008 to 2012 in China's A-Shares Stock Markets and analyzed by our evaluation model. In the meanwhile, we exclude the industrial cycle effect to construct more scientific and accurate dependent variables. Then we run the linear regression of M&A-driven financial performance changes on the 5 selected impact factors - ownership, direction, scale, valuation and payment - to study their influences on the post-M&A performance of acquirers.

After analyzing the results, we conclude that ownership, valuation and scale significantly affect the post-M&A performance. Specifically, in industrial M&A, private-owned enterprises perform better than their state-owned peers, deals with higher relative P/E ratio generate more value than deals with lower relative P/E ratio, and deals with lower relative scale ratio generate more value than deals with higher relative scale ratio. And based on our analysis, we provide suggestions for corporations, regulators and investors involved in China's A-Shares Stock Markets.

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Key Words:

Industrial M&A, China's A-Shares Stock Markets, Impact Factors, Post-M&A Performance

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Acronym

CRSC: China Securities Regulatory Commission

M&A: Mergers and Acquisitions

SME: Small and Median Enterprises

GEM: Growth Enterprise Markets

FI: Financial Index (of Companies)

IFI: Industrial Financial Index

FIS: Financial Index Score

IFIS: Industrial Financial Index Score

comscore: composite score

TF-FIS: Trend-Free Financial Index Score

TTM: Twelve Trading Months

Chapter 1 Introduction

The China's A-Shares¹ Stock Markets commenced in late 1980s and experienced a rapid development from 1990s onwards. Since 1993, when the first China's M&A was conducted, 17000 M&A activities have occurred in the China's A-Shares Stock Markets (Zhao Liu, 2007). Especially after the financial crisis, when decrease in export and consumption motivated the publication and revision of the *industrial restructuring guidance*, which intended to accelerate the restructuring and upgrading of China's industry structure, M&A activities became more frequent in China's A-Shares Stock Markets. These M&A activities served different purposes, and we are interested in ones with purposes of consolidating industries and sectors, named industrial M&A, because their increases were most significant. According to the information disclosed by China Securities Regulatory Commission (CSRC), 1087 M&A deals happened in 2011, 1814 M&A deals happened in 2012, 2523 M&A deals happened in 2013 while the number reached 4450 in 2014 in China's A-Shares Stock Markets. We can easily see how fast it went.

We think that this enormous and rapid growth of M&A in China's A-Shares Stock Markets is highly related to changes in macroeconomic after the financial crisis. The decrease in economy growth lowered the China's export revenue. Plus, decreased domestic demand as well as needs for adjustment and upgrade in industrial structure worsened China's financial situation (Jiangbo Han, 2011). Such facts call for the actions of optimizing asset location and improving core technologies in order to regain corporations' competitiveness locally and globally. To achieve this goal, M&A, especially ones that serve purpose of consolidating, were discovered and widely undertaken by corporations because they are a fast and efficient channel. They help companies to gain new technologies, enter new markets, raise popularity and produce

¹ Shares in mainland China-based companies that are traded on China's stock exchanges such as the Shanghai Stock Exchange and the Shenzhen Stock Exchange. A-shares are generally only available for purchase by mainland citizens. A-Shares are contrast to RMB B-Shares which are owned by foreigners who cannot purchase A-shares due to China's government restrictions.

synergies, leading to an increase in profitability (Fang Sun et al., 2009).

We believe our study of corporate performance will make meaningful contribution to the China's A-Shares Stock Markets, both theoretically and practically for following reasons:

- 1) M&A plays an important role in an enterprise development life cycle, and it's the road that most listing companies in China have gone through (Genfu Feng et al., 2002). But M&A requires thorough preparation and delicate execution. By studying how different M&A impact factors, such as ownership of the acquirer and M&A directions, would affect merger's success and post-M&A performance of acquirers, we can help corporations to select optimal transaction strategies when doing M&A and to improve the performance of acquirers afterwards.
- 2) Our study can help regulators to better understand the motivation of M&A activities, the importance and influences of M&A activities and the different meanings of strategies corporations choose, and to adjust policies and guidance accordingly. It would allow M&A to be carried out more smoothly in the China's A-Shares Stock Markets, and boost the future M&A activities.
- 3) Digging into this topic would add value to the academic world. Due to differences in research background, samples, methods and other factors, previous researches hardly came up with an agreed result. The arguments of whether M&A makes value, what kind of M&A activities can bring synergies and how strategies play in the whole M&A process remain ongoing. In our research, we solely focus on industrial M&A in China's A-Shares Stock Market, and our research samples share the same characteristics, In this case we can help establishing a more accurate result.

In our research, we use the latest data from China's A-Shares Stock Markets to

figure out, from 2008 to 2012, how the financial performance of the acquirers change after the industrial M&A deals and how the changes are linked to the selected impact factors – ownership of the acquirers, M&A direction, relative asset scale, relative P/E ratio and payment. To be specific, we set up our unique model to quantify the financial performance change caused by the M&A transactions and run a linear regression of the financial performance change on the selected impact factors.

And based on the testing result derived from our study, we find that among the five selected impact factors, ownership, scale and valuation impose significant influence on the post-M&A performance of acquirers. To be specific, in industrial M&A, private-owned companies perform better than their state-owned peers, deals with higher relative P/E ratio generate more value than deals with lower relative P/E, and deals with lower relative scale ratio generate more value than deals with higher relative scale ratio. While direction and payment, in our study, are indifferent in affecting post-M&A performance of acquirers. We further analyze the causes of the result. Combining the study result and our analysis with the status quo of China's A-Shares Stock Markets, we extend our advices to corporations, regulators and investors that might be increasingly beneficially related in the industrial M&A deals.

Chapter 2 M&A Framework and Theory

2.1 Definitions

In academic world, M&A and restructuring are always confused and mentioned together. But M&A, in the real world, is different from restructuring. Hence it is necessary for us to clarify them in order to clear the research topic of this paper.

Restructuring contains a lot of information, and all restructuring can be divided into two groups: internal restructuring and external restructuring (Lyndon Norley et al., 2008). Internal restructuring means that corporations reallocate and adjust company assets to fully utilize the benefit of existing assets in order to bring in the biggest profit to the shareholders/owners. During this whole process, management mechanism and asset allocation change while the ownership of assets remains unchanged. So it is an internal operating adjustment (James A. Brickley et al., 1990).

On the other hand, external restructuring indicates assets transfer (Mergers, Acquisitions, Swap etc.) among corporations. It aims to strip off the bad assets and acquire good assets, leading to the full utilization of asset owned. The essence of this kind of asset reallocation, i.e. buying or selling assets, is transference of assets ownership between legal entities (Katariina Hakkala, 2004). And for the research we are doing, we focus on external restructuring, namely Mergers and Acquisitions.

Mergers can be executed in two ways. The first kind is merger by absorption. This kind of merger is that two or more companies merge, and one company absorbs the rest of companies and continues its existing. In this case, the existing company maintains its name and is entitled to absorb other companies' asset and liabilities while absorbed companies no longer exist (Department of Treasury, PRC, 2004). For instance, in late 1990s, Microsoft merged with multiple competitors, including the famous Lotus, using this form and expands itself. By dividing this kind of merger into details, researchers get horizontal merger, vertical merger, and conglomerate.

The second kind is merger by consolidation. This kind means two or more participants merge into a new company and none of the companies gets to exist (Department of Treasury, PRC, 2004). For example, in Jan 2001, American Online and Time Warner merged and became a major player in Media and Entertainment industry.

Acquisition is another common approach for corporations to expand. It refers to a corporate action in which a company buys most, if not all, of the target's ownership stakes in order to assume control of the target firm (Department of Treasury, PRC, 2004). Normally, people divide acquisition into two groups: friendly takeover and hostile takeover. *Securities law of the PRC* stipulates that acquisition is an action that a company sends out tender offer to all shareholders of targets when the acquirer holds more than 30% of shares outstanding of the targets.

Classification of external restructuring can be showed in Table 2.1:

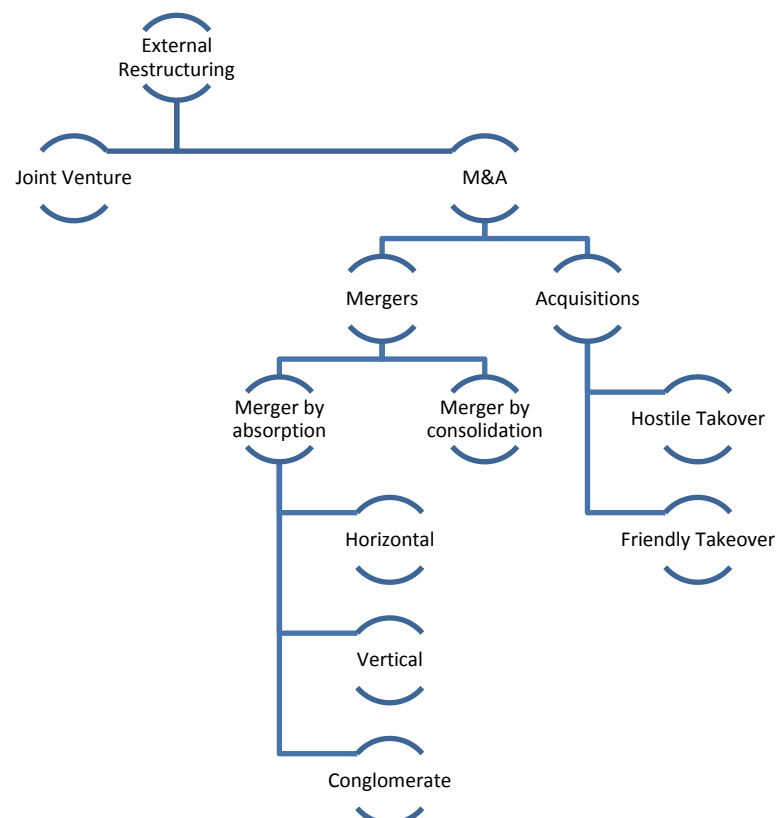


Table 2.1: Types of External Restructuring

2.2 Types of M&A

2.2.1 Horizontal, vertical and conglomerate

Depending on what industries of participants are in, we can divide M&A into three types: horizontal, vertical and conglomerate (Scott Moeller et al., 2014), and this is the most common way to categorize M&A in academia and practice.

Horizontal merger refers to the merger occurring between companies in the same industry. Horizontal merger is a business consolidation that occurs between firms who operate in the same space, often as competitors offering the same goods or service (Joseph Ferrell et al., 2000).

Vertical merger refers to the merger between two companies producing different goods or services for one specific finished product (Ruth Maddigan et al., 1985). A vertical merger occurs when two or more firms, operating at different levels within an industry's supply chain, merge operations.

Conglomerate merger refers to the merger between firms that are involved in totally unrelated business activities. There are two types of conglomerate mergers: pure and mixed. Pure conglomerate mergers involve firms with nothing in common, while mixed conglomerate mergers involve firms that are looking for product extensions or markets extensions. Conglomerate mergers allow companies to share technologies and markets, increases type of products, drives sales and lowers operating risk (Brue L. Stanley and McConnell, 2005).

2.2.2 Friendly takeover and hostile takeover

According to whether the target defends, M&A can be divided into friendly takeover and hostile takeover.

Friendly takeover is the situation in which a target's management and board of directors agree to a merger or acquisition by another company. In a friendly takeover, a public offer of stock or cash is made by the acquirer, and the board of the target firm will publicly approve the buyout terms (Monica Schnitzer, 1996). Both parties are enthusiastic about the merger, and it is done in a friendly way.

Hostile takeover means the acquisition of the target by the acquirer is accomplished not by coming to an agreement with the target's management, but by going directly to the company's shareholders or fighting to replace management in order to get the acquisition approved (Monica Schnitzer, 1996). A hostile takeover can be accomplished through either a tender offer or a proxy fight.

Chapter 3 Literature Review

3.1 Literature review about M&A motivation

For performance study, the first question we should answer is what firms' motivations are. And regarding this topic, western and eastern researchers have conducted quite a lot of studies. And due to different stages of capital markets they are in, their results vary and evolve overtime.

Tobin's Q theory first explained the motivation for M&A activities from the perspective of expansion in 1969. James Tobin brought up the concept of Q ratio. The Q ratio is calculated as the markets value of a company divided by the replacement value of the firm's assets:

$$Q \text{ ratio} = \frac{\text{Total Market Value of Firm}}{\text{Total Asset Value}}$$

A low Q (between 0 and 1) means that the cost to replace a firm's assets is greater than the value of its stock. This implies that the stock is undervalued. Conversely, a high Q (greater than 1) implies that a firm's stock is more expensive than the replacement cost of its assets, which implies that the stock is overvalued. This indicates that for firms wanting to expand, it costs them much less to acquire other companies than start and develop from scratch in order to obtain extra productivity. And that explanation is the first step toward interpreting the motivation of M&A.

One big pursuit of M&A is the potential synergies within corporations. Synergy is the creation of a whole that is greater than the simple sum of its parts. Being a concept used to be quoted in Chemistry, H. Igor Ansoff (1971) introduced the same concept in corporate and named it synergy. M&A synergy refers to a financial benefit that a corporation expects to realize through asset relocation, operation optimization and strategy perfection etc. when it merges with or acquires another corporation. Ideally, the synergy would drive the performance of post-M&A company. Generally speaking, synergy contains three dimensions:

- 1) Operating synergy. It refers to acquirers and targets combine their strengths and minimize their weaknesses. M&A is used to realize the economies of scale horizontally and enable industries combination vertically. By doing so, enterprises can save cost and improve their profitability. In this category, we can further divide all synergies into three types:
 - a) Marketing synergy. It refers to the use of information campaigns, studies, and scientific discovery or experimentation for research or development. This promotes the sale of products for varied use or off-markets sales as well as development of marketing tools and in several cases exaggeration of effects.
 - b) Revenue synergy. It means the opportunity of a combined corporate entity to generate more revenue than its two predecessors stand-alone companies would be able to generate.
 - c) Cost synergy. A cost synergy refers to the opportunity of a combined corporate entity to reduce or eliminate expenses associated with running a business. Cost synergies are realized by eliminating positions that are viewed as duplicate within the merged entity. This is related to the economic concept of economies of scale.
- 2) Financial synergy. It is a result of number of benefits, such as better fundraising ability and healthier financial situation, which flow to the entity as a consequence of M&A. To be more specific, These benefits may be:
 - a) Cash slack. This is when a firm having number of cash extensive projects acquires a firm which is cash-rich, thus enabling the new combined firm to enjoy the profits from investing the cash of one firm in the projects of other.
 - b) Debt capacity. If two firms have no or little capacity to carry debt individually, it is possible for them to join and gain the capacity to carry the debt through decreased gearing (leverage). This creates value for the firm, as debt is thought to be a cheaper source of finance.
 - c) Tax benefits. It is possible for one firm to have unused tax benefits which might be offset against the profits of another after combination, thus

resulting in less tax being paid. However this greatly depends on the tax law of the country.

- 3) Management synergy. Synergy in terms of management and in relation to team working refers to the combined effort of individuals as participants of the team. The condition that exists when the organization's parts interact to produce a joint effect that is greater than the sum of the parts acting alone. Positive or negative synergies can exist. In these cases, positive synergy has positive effects such as improved efficiency in operations, greater exploitation of opportunities, and improved utilization of resources. Negative synergy on the other hand has negative effects on production in the firm such as reduced efficiency of operations, underutilization of resources and disequilibrium with the external environment.

In conclusion, synergy strengthens corporations through cost deduction and profit increase, and enhances enterprises' competitiveness in the market.

Bergh (1997) categorized firms' M&A motivations into four classes:

- 1) Financial synergy. As mentioned before, it could save cost, drive profitability and realize the economies of scale.
- 2) Management synergy.
- 3) Senior management's action. It indicates that sometimes the M&A comes from personal reasons, such as he wants to take actions in order to show that he is doing his/her job.
- 4) Reduction of operational risk. By implementing vertical, horizontal or conglomerate mergers, companies are able to lower their risks to macroeconomic and business circles, and enhance the stability of operation and profit.

Bergh's theory of four classes roughly summarizes the starting point of doing M&A, but it leaves out that fact that M&A can bring influence on firm's structure as well as the whole consumer markets. In reality, some deals may not fall into these categories. For instance, Lenovo acquired IBM's PC business for the purpose of

globalization realization as well as reputation promotion even though IBM's PC business had been losing Lenovo's money many years after the acquisition. The merger, which was not financial irrational, brought what Lenovo wanted in the first place and had a profound impact on Lenovo's future development.

Brouther wrote in 1998 that motivations of M&A should fall into three categories: financial reasons, strategy reasons and personal reasons. Similar to this, Barkoulas, Baum (2001) divided motivations into three levels:

- 1) Strategy level. It indicates that by M&A, corporations are eager to realize the economies of scale, to consolidate supply chain or to break into new markets in order to provide perfect strategy layout for future development.
- 2) Management level. It means that corporations go through M&A to serve the purpose of lowering management cost and raising effectiveness of senior management team.
- 3) Personal level. It refers to senior managers want to receive higher payment and they use M&A to push corporations performance.

Robert F. Bruner (2002) summarized previous papers and researches and listed some of motivations as following:

- 1) Realize Economies of scale
- 2) Harvest synergy
- 3) Obtain undervalued assets
- 4) Increase markets shares and competitiveness
- 5) Avoid restrictions and rules
- 6) Enhance profitability

Some scholars also dug into negative motivations for the M&A. Roll (1986) came up with theory that overconfidence may motivate senior managers' wrongful action. He thought that in economy prosperity period, health operation and optimistic expectation could make senior managers be overconfident and blindly believe their

judgments. In terms of M&A, senior managers' overconfidence made it possible for acquirer to overstate targets' profitability in the future and underestimate the risk embedded in the deal, leading to a possibly overpayment and ultimately higher financial stress and operational risk. Or in a different scenario, senior managers' overconfidence may lead to wrongful expected synergies of M&A. When targets not only can't bring synergies but also bring losses, the M&A would turn out to be nothing but a failure. And when prosperous period fades away and macroeconomic starts worsening, acquirer would face a bigger chance of bankrupting as a result of overly expansion. Thus overconfidence is really a point that corporation should be aware of.

Agency problem is a long-existing problem in M&A. Amihud and Lev (1981) found out that senior managers had the motivation to conduct M&A activities just for self-interest, i.e. higher compensation. Jensen's research in 1986 pointed out that some senior managers initiated M&A just to avoid distributing retained earnings to shareholders in order to control corporations' resources. This kind of self-interest initiated M&A activities not only would not cause profit but also would jeopardize corporations' operation and development, leading to loss for shareholders.

Regarding this topic, plenty of researches have been done. You (1986) found out that the more shares CEOs had, the higher profit M&A could generate. Agrawal (1987) found out that the fewer shares CEOs had, the bigger chance they initiated riskier M&A deals over safer ones. Yaniv Grinstein and Paul Hribar (2004) also dug into the relationship between overconfidence of senior managers and M&A. Their research pointed out that the more confidence senior managers had, the more likely corporations were to take risky M&A activities. In the meantime, they found out that the correlation between overconfidence and performance of M&A was negative. And in China, because of China's special political and economic system, agency problem is prevalent especially in the state-owned companies and it is almost impossible for investors to take part in and supervise M&A.

Jinhua Xia (2005) summarized motivations and believed that there are six motivations for state-owned enterprise:

- 1) Implement policies
- 2) Develop and expand
- 3) Achieve evolvement of company strategy
- 4) Access to resources such as mine and land
- 5) Receive special treatment from government
- 6) Back door listing

To conclude, researchers' studies focus on two dimensions: positive motivations and negative motivations. Positive motivations include expansion, pursuit of synergies, improve competitiveness etc., and they all fall in the sense of increasing revenues and lowering cost. Negative positives include overconfidence and agency problem, i.e. the inconsistent between owner and manager of corporation causes irrational behaviors and brings in loss to firms.

3.2 Literature review about M&A strategy

M&A strategy refers to acquirers' design about the execution of M&A, such as choosing targets, picking industry, selecting timing of M&A, conducting valuation of targets and designing paying method. Researches about M&A strategy mainly focus on that when acquirers using different strategies, whether M&A went well and succeeded, and met expected benefits.

The empirical study Jensen and Ruback (1983) did came up with the conclusion that friendly takeover is quite likely to drive targets' profitability after M&A while hostile takeover is not. Palepu and Ruback (1997) also found out that in hostile takeovers' cases, targets' cash flows got worse because they tended to overpay a lot for acquiring, affecting its required operating cash.

Ravenscraft (1987) learned on his study that markets share motivated M&A bring no positive, or even negative, effect on the stock price Eckbo (1992) got the same conclusion in his research. Berger and Ofek (1995) pointed out that for M&A that happened in U.S., targets averagely take 13%-15% hit to their firms when conducting conglomerate. They also found out that targets increased value when conducting M&A in the same or close industries, and the closer industries were, the bigger value M&A brought. Maquieira (1998) also found that conglomerate didn't produce significant increase on acquirers' stock prices while acquirer and targets in the same or close industries, there were significant jump on acquirers' stock prices.

Based on acquirers' situation, Rau and Vermaelen (1998) divided all M&A into two categories: "value" (low P/B ratio) and "growth" (high P/B ratio). They found out that "value" type M&A generated better results than "growth" type (8% vs. -17%).

Bruner (1988) discovered that acquirers with huge amount of cash on their balance sheets tended to get worse performance after M&A because this kind of acquirer was easier to walk into impulse action and result in irrational M&A. However, when a company had huge amount of cash while maintaining low debt ratio, its M&A activities with companies that had opposite financial situation tended to generate extra value for the company because M&A raised its debt ratio, which increased its interest payment hence lower tax, and reduced its opportunity cost of holding unused cash.

By digging into M&A in U.S., Travlos (1987) and Yook (2000) figured out that when transactions were paid by stocks/shares, acquirers normally brought negative effect to their markets values, while when transactions were paid by cash, the overall extra value for the acquirer was normally around zero. The explanation for this result is the signal theory: when the transaction is paid by stocks, markets think that senior managers of acquirer regard its stocks as overvalued assets, and markets respond to this by selling acquirer's stock to gain profit or reduce risk, leading to a decrease in

stock price; when the transaction is done by cash, it signals that the acquirer's stock are undervalued, and its senior managers rather use precious cash to run the deal than selling its undervalued shares. Markets respond to that by buying acquirer's share, leading to an increase in acquirer's stock price. Fangjian Fu and Leming Lin (2013) also dug into payment methods for M&A deals, and reached the same result while their explanation is a little different: when paying shares, acquirer tended to overvalue the firm of targets and led to overpayment, while acquirer was more cautious about valuation of targets while paying cash.

Some researchers also have done some useful researches about China's A-Shares Stock Markets. Haiyan Chen (1999) studied payment method of listed companies when conducting M&A, and argued that mixed payment had the best outcome in terms of financials, and deals with mixed payment and stock payment performed better than transactions with cash payment. Jiwei Li (2003) also dug into the same topic, and came up with the conclusion that there was no significant performance difference regarding payment method, and the differences of performance in samples were due to different economy environments and industries of samples.

Xiaobin Jin et al. (2002) looked into the relationship between conglomerate, characteristic of companies and incentive system, and pointed out that conglomerate has neutral effect on company's performance, and is a way of diversification and a need of improving profitability. Shanmin Li and Tao Zhu (2006) studied 251 conglomerate transactions of China's listed companies happened between 1998 and 2002, and pointed out that conglomerate transactions generated averagely 9.6% loss to acquirers in this time period, and the bad relationship between acquirers and government had negative effect on the post-M&A performance. Regarding the same topic, Lei Li and Zhiguo Song (2009) also dug into the question of direction of M&A, and made a statement that horizontal transactions had the best result and vertical ones had the worst. And in terms of conglomerate, they thought it was too early to run into a decision because it's better to study this topic over a longer period of time.

Chaopeng Wu and Xiaojie Ye (2012) researched the relationship between performance of M&A activities and senior managers, and argued that the closer the relationship between senior managers and the government were, the worse the post-M&A company performed. Furthermore, when change of managers took place, government-related company's stock price would skyrocket while non-government-related ones would not. It implied that interference by government affects firms negatively.

Weinan Chen (2013) also analyzed financing methods' effect on M&A activities for listed companies, and he pointed out that equity financing mainly caused loss to post-M&A performance in terms of financials while non-equity financing normally brought in extra value for overall performance. And for all financing methods, they all negatively affect firm's performance for the year that transaction happened, and among them internal financing imposes the less negative effect on the company than equity financing and debt financing.

From above researches, we can easily spot that these previous studies are about how M&A performance is affected by following points:

- 1) Reaction of target (hostile or friendly)
- 2) Categories of M&A (horizontal, vertical, conglomerate)
- 3) Industries of targets
- 4) Payment methods of the deal
- 5) Government-related
- 6) Timing selection

By analyzing all these different dimensions of M&A, previous researchers came up with different aspects of suggestions about when and how firms conduct M&A can benefit firms the most.

3.3 Literature review about M&A performance

In two chapters above, we collect and organize previous researches about how motivations and strategies can affect the performance of M&A. In this part, we choose some previous researches about overall performance.

Meeks (1977) studied 233 M&A deals happened in UK from 1964 to 1971, and found out that acquirer's profitability decreased after M&A, and it reached the lowest point in the fifth year. In the meantime, 66% of acquirers' performances, in terms of the profitability, stay below the average performances of the industries they operate in. However, the research from Kaplan (1989) researched on 76 LBOs in 1980s and pointed out that acquirers' net income and cash flow became significantly better three years after M&A. In 1992, Healy and Ruback did some researches on the similar topic. They compared cash flows of acquirers of 50 M&A happened from 1979 to 1984, and came to conclusion that cash flows of acquirers could compensate for the premium they pay in the M&A deal.

While in China, scholars also finished some researches. Xiaoping Liu, Xiaowei Huang and Hongyu Guo (2009) found out that post-M&A performance of acquirer was related not only with type of M&A, but also with the what business cycle stage it is in. Juewen Zhou and Tianxi Zhang (2013) exercised event study to look into the performances of acquirer and targets, and argued that significant increase existed in targets' performance while no significant one happened in the acquirer.

Xingyu Wu and Hongqi Yuan (1998) conducted a research on performance from financial perspective. They judged firms' performance from four ratios, EPS, ROE, ROI and Debt to Asset ratio, and they found out that after M&A, the listed acquirer's first three ratios went up while the last one went down. Genfu Feng and Huifang Wang (2001) picked different financial ratios and came to the conclusion that M&A benefited corporations from financial perspective. We can see that results differ, and that leads us to our next part.

3.4 Inadequacies in previous researches

There should be reasons causing the differences on previous researches and we think inadequacies in previous researches are caused by:

- 1) Inadequacy of measuring performance of M&A. While financial ratios are easy to measure, some non-numerical aspects are quite hard to observe. Normally we measure added value for both participants after M&A, the efficiency of post-M&A company and profitability of post-M&A company to evaluate the success of M&A (Genfu Feng et al., 2002). But factors such as management ability cannot really be measured. Such fact causes measurement of success troublesome and hence leads to multiple theories about M&A.
- 2) Data loss in China's A-Shares Stock Markets. Because of the specialty of China, not every data is completely recorded, and that questions the reliability of previous researches that used event study method.
- 3) Inconsistency in chosen ratios. Choosing different ratios when conducting financial analysis, and because of it, even the same set of data can come up with different results. Such fact undermines the comparability between researches, and makes it difficult for scholars to reach an agreement in the academic world.
- 4) Inconsistency in choice of time horizon. What's the optimal time horizon to conduct the research is unclear, and because of that previous researches cannot agree upon what time horizon they should use. Due to this, the results differ.

Chapter 4 Research Hypothesis

Mergers and acquisitions can play a very crucial role in the enterprise development life cycle. A successful M&A deal is able to boom the business while a failed transaction might back fire the acquirer, swamped in financial mud (Rouse, T. and Frame, T., 2009). Before complementing the M&A strategies, there is no doubt that the acquirers are supposed to be discreet in conducting markets / industry research, due diligence, etc. Once the M&A motivation decided, the next step is to design the M&A deal structure, in other words, is to evaluate various targets as well as how the strategies can be practically executed. According to real cases happened in the past, surely we can see the M&A strategies company decide could dramatically influence the post-M&A performance. Nevertheless, there are other factors, which the acquirer cannot decide, e.g. the properties of acquirers themselves, can also influence the post-M&A performance.

In order to quantitatively assess the influence imposed by impact factors, we firstly set up several research hypotheses as followed based on previous academic analysis and our own research motivation and understanding.

4.1 Ownership

According to “Hubris Hypothesis” brought up by Roll (1986) and the “research of agency influence on M&A” by Amihud and Lev (1981), Jensen (1986), factors from management team indeed matter a lot in deciding the quality of the M&A deal. In this case, we believe the ownership structure of acquirer is an impact factor and worth looking into.

Acquirers in our selected sample cases are put into 2 categories: one is state-owned enterprise, which is legal entity that is created by the government in order to partake in commercial activities on the government's behalf. A state-owned

enterprise (SOE) can be either wholly or partially owned by a government and is typically earmarked to participate in commercial activities (Company Law of PRC, 2005). The other one is private-owned enterprise. To be noted, the private-owned enterprises we discuss in our paper refer to non-state-owned enterprises. Specifically, they are listed enterprises established by individuals without government stake in ownership or control.

In China, state-owned enterprises commonly have some paradox such as “agency problem” and “equity allocation”, so it is more likely for state-owned enterprises to engage in “unreasonable” M&A deals. Tao Zhu (2007), according to his research, figured out that the private-owned enterprises apparently outperformed their state-owned peers in the post-M&A development. What could mostly explain the discrepancy is that the management teams of the private-owned enterprises most probably consist of the founder and the controlling shareholders. Unlike the state-owned enterprises, whose management teams are often appointed by the government, private-owned enterprises are more likely to avoid the operational / financial inefficiency brought from the “agency problem” (Minggui Yu, 2004). When conducting an M&A deal, the private-owned enterprises might do more rigorous due diligence, analyze and assess various risks more objectively, and make their M&A strategic decisions in the favor of their authentic enterprise stake. From this perspective, the post-M&A financial performance of the private-owned enterprises should be better than that of their state-owned peers.

And we believe that there’s another reason that worth considering. Because China isn’t in a perfect free economics landscape, the government is playing a crucial role in regulating the macroeconomics by supervision and intervention (Minghong Xu et al., 2001). The state-owned enterprises, under such markets setting, might not stand on the side of their own benefit and then take unfavorable strategies during the M&A deals, shifting the extra M&A cost to their own shoulders (Hengyao Zhai, 2009). As a consequence, the post-M&A performance will inevitably deteriorate. In the meantime,

the management teams of the state-owned acquirers may usually raise their valuation of the targets in order to facilitate the M&A negotiations and come to an agreement as soon as possible under the pressure from the government side. Overpayment will generate financial risk after the M&A transaction (Yuqiao Zheng, 2012).

All the researches mentioned above are conducted a long time ago and China's A-Shares Stock Markets has been through a fast development after the financial crisis. What's more, our research distinguishes from the previous researches by focusing on industrial M&A cases. Therefore, we think it's valuable to re-check the influence of this Ownership impact factor.

Hypothesis 1: the post-M&A financial performance of private-owned enterprises outperform their state-owned peers.

4.2 Direction

Yilong Yao et al. (2009) argued that different M&A directions could generate different amount of value for different companies. Horizontal M&A aims for scale of economic, while vertical M&A sets goals to reduce transaction cost and build industry barriers. And for conglomerate M&A, the main goal is diversification. Therefore, we believe that we should look into how different M&A directions affect post-M&A performance of acquirers in China.

In our research, because the economic development maturity level of China is somewhat below that of western developed countries, the participators currently in China's industrial M&A are mostly Small and Median Enterprise (SMEs). For SMEs, their involvements in the industrial M&A deals are more motivated to enlarge their company size as well as promote markets status (Xue Yang and Qin Feng, 2006). They run their businesses in the industries which they are quite familiar with and this in-negligible familiarity will contribute tremendously to a more successful industrial integration. In other words, due to the horizontal familiarity, both acquirers and targets

are more able to consolidate their economic resource efficiently and reasonably then to realize the optimization of the resource allocation, eventually sparking off a sound post-M&A financial performance (Xiaowei Cheng, 2007). Plus, SMEs usually perform better in the horizontal M&A deals than in the vertical or conglomerate M&A deals. Possible explanations, as we said, are that the M&A dealing with suppliers and customers will usually take a large amount of capital investment to execute. Even it is done, such strategies can't guarantee that there will not be any negative impact on the core business since such kind of M&A will make resource greatly scatted and threaten the core business development potential. To sum up, we think horizontal M&A brings more value to acquirers than vertical or conglomerate do.

Hypothesis 2: horizontal M&A deals are more efficient in booming the post-M&A financial performance than vertical or conglomerate ones for acquirers.

4.3 Scale

The enterprise scale of the target will also, to a certain extent, affect the post-M&A financial performance of acquirer. Research from Tiancai Xing and Yinxuan He (2011), Yanni Yu (2012) identified the existence of the influence from factor – the relative asset scale ratio ($\frac{Asset\ of\ target}{Asset\ of\ Acquirer}$), and found out that relatively large enterprise scale of the target is helpful in bringing up the post-M&A financial performance for the acquirers. In China, this research is relatively new, so we think it's a good idea to test if scale really is a factor in affecting post-M&A performance, and if so how scale affects the post-M&A performance.

In Tiancai Xing, et al.(2011)'s paper, their argument was that if the targets are relatively similar with the acquirers or even exceed the acquirers in terms of enterprise scale, the integration after the M&A transactions is more likely to result in a larger occupation of market shares or a leading competitive position. They believe that in some industries, especially manufacture industry, the leading company can

take over its closely following peers so as to heighten its market shares, access a greater bargaining power, raise its margin revenue and establish further business accomplishment. Conversely, if the enterprise scale of the targets is too small compared with the acquirers then an obviously positive effect can't be expected. We agree with their judgment, and want to test it with our analysis.

Hypothesis 3: Targets with larger enterprise scale will contribute more to the improvement of the post-M&A financial performance of the acquirers than targets with smaller enterprise scale.

4.4 Valuation

In an M&A deal, the valuation of the target given by the acquirer counts a lot in deciding the subsequent financial performance of acquirer. Overvaluation of the targets will inevitably impose too much financial pressure on the acquirers while an undervaluation can save payment cost or resource for the acquirers. Research from Rau and Vermaelen (1998) took the PBR (price to book value ratio) of the target as the valuation index to measure the valuation level, recognized the influence from the valuation on the post-M&A performance, and came up with a conclusion that a higher valuation was not in the favor of the subsequent enterprise development due to over-sacrifice of acquirers' resource. Therefore, the valuation of the target is an important issue in affecting the post-M&A performance of acquirer and should be dug deeper using data in China's A-Shares Stock Markets.

To value the target in one M&A transaction, we can deploy the PER (price to earnings ratio). Compared with absolute valuation method like DCF (discounted cash flow), the relative valuation method could provide more commensurability for subsequent data analysis and comparison. For light asset enterprises like TMT, PER is more accurate than PBR for valuing the whole company. However, the existing articles we identified focus on the valuation issue of targets, and don't touch upon the valuation issue of the acquirers, which we think should be fully considered. Therefore,

in our research, we decide to use the relatively valuation ratio of the acquirer to the target ($\frac{PER_{acquirer}}{PER_{target}}$) as an impact factor.

If the relative valuation ratio is high, it indicates that the purchasing price is relatively “cheap”. We think as a consequence, it would stimulate the share price in the secondary markets and reinforce a higher PER of the acquirers. The higher value of the acquirers could generate higher capacity of raising capital through a secondary listing, and therefore it’s easier for the acquirers to run any future potential M&A deals. This is a virtuous economics circle – to raise markets value through M&A and to motivate further M&A by a higher markets value. But if the relative valuation ratio is low then all the ratiocination derived above will be turned around and finally affect the post-M&A performance negatively. We agree with this statement, but considering China's A-Shares Stock Markets is unique and most shares are overvalued (Jia Wang, 2014), we are curious if this statement still holds in China, and eager to test it with our data. Thus, we believe the higher relative valuation ratio is, the better post-M&A performance acquirers can get.

Hypothesis 4: the high relative valuation ratio, the better financial performance of the acquirers should be expected after integration.

4.5 Payment

Currently, payment methods in M&A deals of China's A-Shares Stock Markets include cash, stock swap, mix (cash + stock) and asset exchange, etc. A great amount of researches at home and abroad have focused on the payment issue in M&A deals. One interesting thing is that foreign scholars like Travlos (1987), Yook (2000), Fangjian Fu and Leming Lin (2013) held opinion that M&A deals settled by stock exchange usually become financially underperformed afterwards. However, domestic scholars Haiyan Chen (1999) et al. also have done similar research on China's A-Shares Stock Markets but came up with opposite conclusion that cases via non-cash

payment beat those via cash payment. Such debates have their own back-up evidences, and we think it would be worthwhile to run our own analysis to figure out how different payment methods really affect the post-M&A performance of acquirers in China.

In our own opinion, the conclusive variation of existing literatures may come from the difference of markets efficiency and industry settings between western and China. In western markets, payment by stock exchange in M&A deals will signify overvaluation of the acquirers' stock price to the markets. But in China's A-Shares Stock Markets, overvaluation is a systematical problem attached to the entire stock markets instead of any individual stock. Thus in China, payment via stock, as one single factor, will not have any signal effect and hardly have impact on the investors.

Looking at the status quo of China's A-Shares Stock Markets, we realize that the ownerships in most of the listed companies are still highly concentrated (Yuefen Lin, 2005). That means dilution effect through new share issuing actually is scarcely significant to the original shareholders but as we mentioned before, precious cash is saved. "Cash is king" as one of the M&A analysts we interviewed told us. A sound cash flow / cash reserve is what matters to post-M&A development of acquirers. As for mix payment, it is the combination of cash and stock swap. This payment method can not only satisfy investors' need to liquidate the asset in a short period of time, but also provide the new shareholders with the opportunity to share the M&A achievement such as synergies and business expansion. Therefore, we believe transactions with stock payment generate more value than transactions with pure cash payment.

Hypothesis 5: Order of contribution towards the post-M&A performance –
Pure Stock Swap > Mix > Pure Cash

Chapter 5 Post-M&A Performance Evaluation Models

In general, there are two kinds of mostly accepted post-M&A performance evaluation models, namely stock price-based evaluation model and financials-based evaluation model.

5.1 Stock price-based evaluation model

5.1.1 Average stock price analysis

This analysis chooses a time range covering both periods before and after the M&A transaction and looks at the change of the stock price on a daily basis. The evaluation process of the post-M&A performance is to look at the trend of the average daily stock price during the testing periods. Formulas are as followed:

$$P_t = \frac{P_{1t} + P_{2t} + P_{3t} + \dots + P_{NT}}{N}$$

$$R_t = \frac{P_t - P_0}{P_0}$$

N: number of samples

P_{it} : stock price at time t of the sample company i

R_t : stock price return within t days since the M&A announcement

(t = 0 means the exact day that the M&A deal is announced)

Average stock price analysis is pretty simple and straightforward, but it doesn't reflect the real changes of all the stocks. It will strengthen the influence of the high-priced stock while weaken the low-priced ones and, to a large extent, distort the value added effect from the M&A deals.

5.1.2 Cumulative returns analysis

Return, as a relative index, compared with average stock price analysis, is able to

avoid the influence from the stock price difference on assessing the post-M&A performance. Formulas of calculating the CR (cumulative returns) are:

$$CR_t = r_t + CR_{t-1}$$

Where:

$$r_t = r_{1t} + r_{2t} + r_{3t} + \dots + r_{NT}$$

$$r_{it} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t}}$$

N: number of samples

P_{it} : stock price at time t of the sample company i

(t = 0 means the exact day that the M&A deal is announced)

To be noted: the cumulative return analysis can't assure that the change of the return is contributed by the M&A deals.

5.1.3 Event study

Event study is also called CAR (cumulative abnormal return). It is a quantitative analysis that measures the effect of one particular event based on the statistic data collected before the after the event (Gilson Ronald et al., 1995). This popular analysis is also based upon the Efficient Markets assumption to evaluate the variation of the stock price due to the event for the performance assessment.

By using the event study analysis, we will regard any single M&A deal as an event and the announcement of the M&A deal as the “windows”, focusing on whether the announcement of the M&A transaction would cause the abnormal change of the stock price. CAR is an indication that reflects the fluctuation effect of the announcement on the stock price.

The theoretical assumption of the event study is the CAPM model (Capital Asset

Pricing Model).The CAPM was introduced by Jack Treynor (1961 - 62), William Sharpe (1964), John Lintner (1965) and Jan Mossin (1966) independently, building on the earlier work of Harry Markowitz on diversification and modern portfolio theory.

The assumptions from the traditional CAPM models:

- 1) All the assets are sellable, i.e. a highly mature marketization.
- 2) Perfect capital markets.
- 3) A risk free rate exists and is available to the markets investors.
- 4) All the investors are risk-averse and will optimize their utility in a certain period.
- 5) Investors' expectations are identical

A well-rounded event study can be divided into six steps:

- 1) Calculate the real return for each sample company during the testing period, for example{-180, -31};

$$R_{it} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t}}$$

In which, $P_{i,t}$ refers to the closing price of sample company i at day t , $i = 1, 2, 3, \dots, n$ (the announcement of the M&A deal is set as day 0);

- 2) Calculate the stock index return at the same particular day t ;

$$Index_R_t = (Index_t / Index_{t-1}) - 1$$

In which, $Index_t$ is the closing price of the stock index at day t .

Since in China, the Shanghai A-Shares index has a very strong correlation with the Shenzhen A-Shares index (Chaoma Liu et al., 2002), thus for the convenience of research, we assume that the index we mentioned is the Shanghai A-Share index;

- 3) Calculate the normal return of each stock (sample company):

$$\hat{R}_{i,t} = \hat{\alpha} + \hat{\beta} * Index_R_t + \varepsilon_{i,t}$$

Where, normal return means that the expected return under the condition that no special events occur, in our research framework, the special event refers to the M&A deal. In general, there are two kinds of methodologies we can use to measure the normal return as we said: one is markets adjustment method while the other is the markets model method. The markets adjustment simply assumes the index return as the normal return of the stock during the event window while the markets model method relies on the CAPM model to calculate the normal return (expected return).

- 4) Calculate the α and β through linear regression;
- 5) Calculate the abnormal return of sample company i at day t during the event window:

$$AR = R_{i,t} - \hat{R}_{i,t}$$

- 6) Sum up all the abnormal return of each stock (sample company) during the event window; if the M&A transactions have created extra value to the acquirers then the AR will turn out to be positive; if the influence of the M&A deal is neutral then the AR will be pretty closed to zero.

Due to solid theoretical foundation, rigorous study methodology and low researching cost, the event study has been wildly accepted and used around the worldwide academia on M&A empirical research.

5.2 Financials-based evaluation model

5.2.1 Single factor evaluation model

If only one index is selected, ROE (return on equity) will be the best to mirror the company's profitability so that usually the single factor evaluation model refers to the ROE index. By using the single factor evaluation model, we, in parallel, only compare

one particular index. It is simple and quick but not sophisticated enough to reflect the other aspects of the company except profitability such as growth potential or risk exposure.

5.2.2 Multi-factors evaluation model

Assessing the company performance is a complicated issue. A well-rounded evaluation model is supposed to include not only financial index but also non-financial index. Though it is difficult to collect and quantify those non-financial index, one thing can't be denied is that, actually to a large extent, the non-financial indexes are incorporated or captured in the financials as a result to reflect the company profile. For instance, the customers' satisfaction will more or less affect the fluctuation of the companies' profitability. Therefore, most of the empirical studies only look at those financials to set up the evaluation model. An evaluation model combining several financial indexes and weighting them variously will be better than the single factor model to achieve the evaluation balance, precision and completeness. (Dawei Zhu, 2011)

Chapter 6 Methodology

6.1 Methodology selection

From the description and analysis about several M&A performance evaluation models in Chapter 5, we know that event study and the financials evaluation model are more popular, scientific, credible and number-driven. In the following paragraphs, we will derive and substantiate our logic of deploying the financials evaluation model instead of the event study based on our research purpose.

Event study, as we said, enjoys a reputation of being theoretical rigorous and practically cost effective. However, the most apparent shortcomings are: First, result is very sensitive to the length of the event windows chosen by different scholars. Second, the fluctuation of the stock price of related companies will, to a certain degree, reflect the shareholders' expectation on the M&A deals. But this expectation is also greatly affected by the markets efficiency, information transparency / asymmetry, and public speculation etc. Researches from behavior finance showed that the stock markets seldom correctly and fully capture the public information disclosure of M&A deals during the announcement period and therefore distort the correct measurement of the post-M&A performance (Linfu Zhao, 2006).

Since the event study rests upon the markets efficiency assumption, besides the two setbacks mentioned above, there are also uncertainty of whether the markets is efficient as limitation on studying the enterprise M&A performance via event study.

As for the markets efficiency assumption, scholars of China have consented that efficiency level of China's capital markets is below the level of strong form efficiency or even semi-strong form efficiency. Therefore, due to a totally different markets environment, the event study model commonly used in western countries could not be simply applied to China's markets situation.

Coming to financials evaluation model, its advantage lies on objectively and continuously reflecting the performance variation after the M&A deals and its shortcomings mainly come from the “fragile” financial indexes which can be manipulated by listed companies who might want to cover the failed deals. Researchers like Xiao Chen, Xiaoyue Chen and Zhao Liu (1999) have strongly argued that although the financials are subject to manipulation, the numbers in the financial statement of the listed companies still convey a larger amount of information. Furthermore, manipulation can only cover the flaw for short period of time and the financial effect of the M&A deal is more lasting and will eventually be captured into the financial statement in the long run. Finally, all the financial statements of the listed companies would be audited by accounting firms, enhancing the data credibility. To sum up, we choose the financials evaluation model due to its capability of mirroring the performance change in a continuous and objective perspective, and its best data source credibility under weak efficient stock markets in China.

6.2 Research design

Our research is conducted as following steps:

- 1) At first, we select our research samples according to our criteria and each sample transaction is briefly introduced.
- 2) On the second step, we look into each selected case to figure out the impact factors involved, namely ownership, direction, scale, valuation and payment. These 5 impact factors are our independent variables used in the regression.
- 3) Thirdly, we start to quantify the financial performance change of each acquirer. To do so, we introduced the Financial Index Score (FIS), which is processed from our selected financial indexes of the acquirers.

As M&A cases happened in different industries, even during the same period of time, not every industry is in the same phase of business cycle. For example, during

2014, high tech industry in China was in prosperity while iron and steel industry was depressed. In this case, FIS extracted from different cases may become incomparable and unparalleled. Therefore, it is necessary to take away the industry cycle effect on the FIS.

To be noted, in our research, we assume that during the short-term period, the financial performance change is driven by M&A effect and industry cycle effect (Table 6.1).

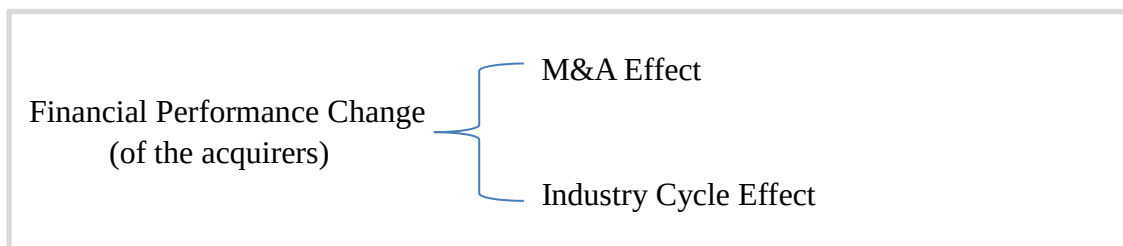


Table 6.1: Break-down of Financial Performance Change

- 1) In order to measure the industry cycle effect from the industry trend, similarly, we introduced the Industrial Financial Index Score (IFIS), which is processed from the financial indexes of each acquirer's listing peers.
- 2) Then we exclude the industry cycle effect out of financial performance change by subtracting IFIS from FIS in order to get the M&A effect, i.e. net performance change brought by the M&A deals for each acquirer. We mark this net performance change as composite score (comscore), which is our dependent variable used in our linear regression.
- 3) Run the linear regression to see to what extent the impact factors will affect the post-M&A performance of the acquirers and then further analyze causes of the effects.

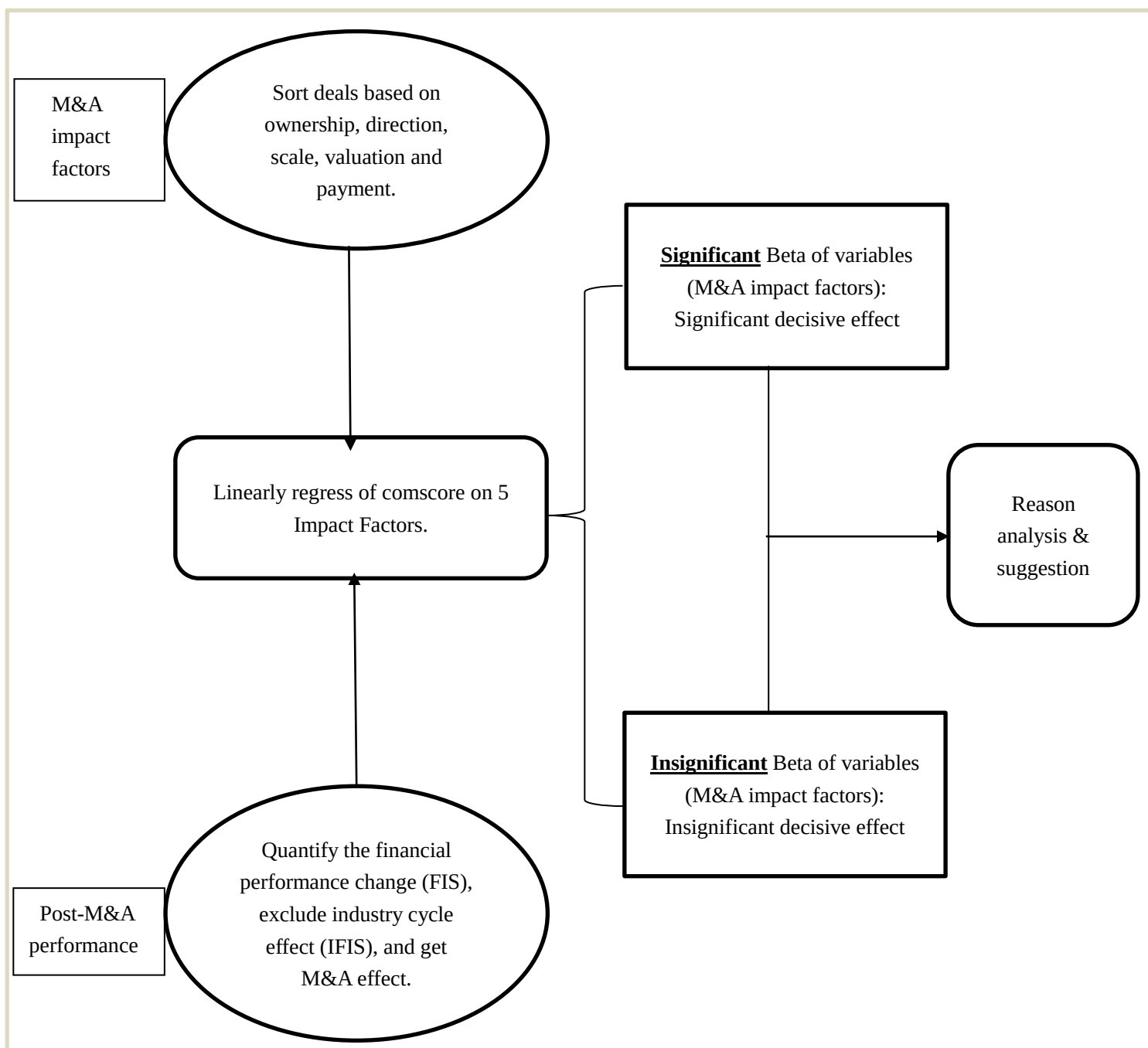


Table 6.2: Research design

6.3 Data selection and process

6.3.1 Samples

Our research targets at those industrial M&A deals occurred in the China's A-Shares Stock Markets and our sample selection follows the following principles based on the research hypothesis and purpose:

- 1) The M&A deal occurred between acquirer and target should not be an affiliated transaction. This criterion is established so as to avoid the possibility that affiliated transaction might impose effect on the authenticity and objectivity of our research.
- 2) The purpose of the deal is to access ownership control of the target. That is to say, after the M&A deal, the acquirer should obtain the controlling position of the target. This selecting criterion is to drive out those “noise samples” – buying shares in the target with purpose of financial investment (expected profitable stock markets) instead of takeover.
- 3) The total asset, net asset or the operating revenue of the targets should exceed the 50% of those of the acquirers in the previous fiscal yearly period. If this condition is not met, the China Security Regulatory Commission (CSRC) does not mandatorily require the listed acquirers to disclose any deal-related information. From the perspective of the information availability, we focus on M&A deals that meet this criterion.
- 4) The total asset, net asset or the operating revenue of the targets should NOT exceed those of the acquirers in the previous fiscal yearly period. If it is the case, there is a possibility that a reverse merger is going on and results in a research disruption.
- 5) The industrial M&A deals increase greatly after year 2008 and the M&A regulation has become very different since 2008. We confine the study time period to begin from Jan 1, 2008 and end by Dec 31, 2012 so as to keep the whole policy and regulation settings relatively constant.
- 6) Only deals that have ultimately met the approval of the CSRC and successfully closed are brought into our research sample pool.

Complying with the six criteria listed above, 31 research samples are selected from all the population deals occurred between Jan 1, 2008 and Dec 12, 2012. Among these 31 samples, 20 cases come from the SME board (small and medium enterprise board) or the GEM board (growth enterprise markets board), accounting for 66.67% and the rest sample cases are chosen from the Main Board in Shanghai or Shenzhen Stock Exchange, China.

The source of our research data are mainly from: (1) Wind database; (2) Juchao Data (3) Bloomberg database (4) Capital IQ (5) Net-Ease Finance (6) Sina Finance (7) Shanghai and Shenzhen Stock Exchange.

Following are our 31 research samples based on 6 criteria we set:

Chart 6.1: 31 sample cases

Code	Announced Time	Name of Acquirer
000157	2008	Zoomlion
002144	2010	Hongda Hi-Tech
600433	2010	Guanhao-Hi Tech
002258	2010	Lier Chemical
002065	2011	DHC Software
002434	2011	Wangliyang Transmission Comp.
000525	2011	Nanjin Red Sun Comp.
000967	2011	Zhejiang Shangfeng Industrial Holdings Co.,Ltd.
002331	2011	Anhui Wantong Technology Co.,Ltd
600499	2011	Keda Clean Energy Co., Ltd
002131	2012	Leo Group Co.,LTD
300010	2012	Beijing Lanxum Technology Co., Ltd
300057	2012	Shantou Wanshun Package Material stock
300058	2012	Bluefocus Communication Group Co., Ltd
002528	2012	Shenzhen Infinova Limited
002498	2012	Qingdao Hanhe Cable Co., Ltd
002439	2012	Beijing Venustech Inc
300136	2012	Shenzhen Sunway Communication Co.,Ltd.
300157	2012	LandOcean Energy Service
600985	2012	Anhui Leimingkehua Co.,Ltd
002096	2012	Hunan Nanling Industry Explosive Material Co., Ltd
002467	2012	Net263 Ltd
601789	2012	Ningbo Construction Co.,Ltd
300210	2012	Anshan Senyuan Road and Bridge Co., Ltd

002340	2012	Shenzhen Green Eco-manufacture Hi-tech Co.,Ltd
600699	2012	Ningbo Joyson Electronic Corp
300161	2012	Rastar Group
002035	2012	Vatti Corporation Limited
600804	2012	Dr.peng Telecom & Media Group Co.,ltd
002130	2012	Shenzhen Woer Heat-Shrinkable Material Co.,Ltd
002049	2012	Tongfang Guoxin Electronics Co.,Ltd

In general, the mergers and acquisitions happened in the past several years have a high focus on industries such as manufacture and TMT. In other words, these two industries were quite active in conducting M&A transactions within China's A-Shares Stock Markets. Influenced by the macroeconomics and economic transformation policy, manufacture enterprises in China have come into an increasingly competitive market. Enterprises with disposable capital began to seek mergers or acquisitions to quickly cut down production cost, enlarge market shares, upgrade core technology, so on and so forth. It sufficiently explains the biggest proportion of M&A transactions in our sample accounted by the manufacture industry. As for the TMT industry, which is currently most popular in China, it has no doubt that more and more enterprises in this "sunrise" business, on one hand, leverage their own technology for booming development and, on the other hand, seek M&A opportunities to perfect their technology, broaden business lines and finally quickly meet the huge demand from the market (Heading Century, 2013). Industry distribution of our selected samples can be seen in the following table:

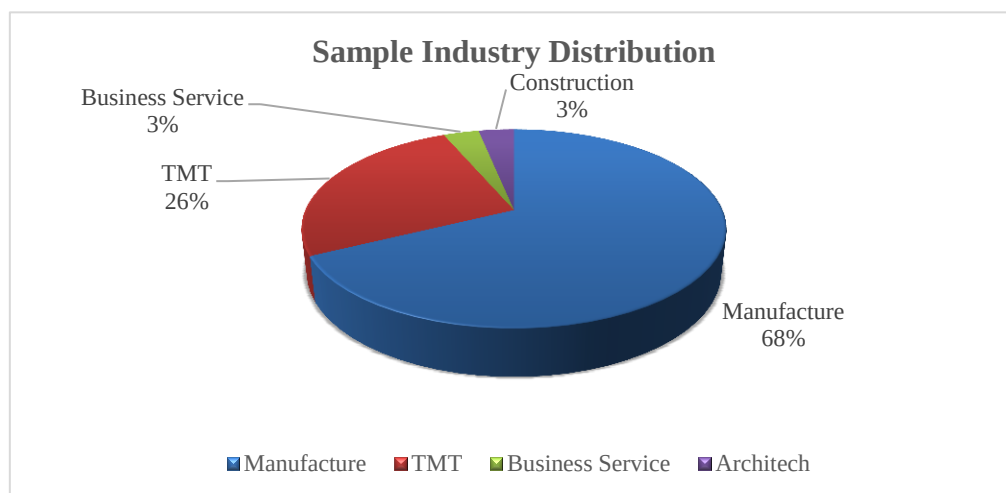


Table 6.3: Sample industry distribution

6.3.2 Independent variables

Based on our research hypothesis in Chapter 4, our independent variables for our linear regression are shown in the following Chart:

Chart 6.2: Details of independent variables

Variables	Details
Ownership	State-controlled vs. Private-controlled
Direction	Horizontal Integration vs. Vertical/Conglomerate Integration
Scale	Relative Asset Scale Ratio (Target vs. Acquirer)
Valuation	Relative P/E ratio (Acquirer vs. Target)
Payment	Cash vs. Stock Swap vs. Mix

We construct all the variables as the following table shows based on our sample variable properties:

Chart 6.3: Construction of independent variables

Variables	Description	Max	Min	Average	Media	STD
Ownership	Ownership of the acquirer; State-owned = 1, Private-owned = 0.	1	0	0.77	1	0.425
Direction	Horizontal = 1, Vertical/Conglomerate = 0.	1	0	0.68	1	0.475
Scale	$\frac{\text{Asset of target}}{\text{Asset of acquirer.}}$	1.96	0.01	0.37	0.25	0.383
Valuation	$\frac{\text{P/E ratio of acquirer}}{\text{P/E ratio of target.}}$	21.3	0.8	4.31	3.02	4.053
Payment	Stock swap = 1, Cash = 0, Mix = 0.5.	1	0	0.44	0.25	0.473

As for the variable calculation of Ratio, we need both P/E ratio of acquirer as well as P/E ratio of target:

- 1) the P/E ratio of the acquirers are based on the days which they have their M&A related asset appraised, to be specific, each TTM (trading twelve months) P/E ratio is calculated by:

$$PE \text{ Ratio of acquirer} = \frac{\text{Stock price on the appraisal day}}{EPS \text{ of TTM backtracking from the appraisal day}}$$

- 2) For assessing the P/E ratio of the targets, most targets are not listed. To calculate

P/E ratios for targets, we introduce an estimation model. To be specific, each P/E ratio is calculated by:

$$PE \text{ Ratio of target} = \frac{\text{Disclosed equity appraisal value}}{\text{Expected earning in the next fiscal year}}$$

The rational of using expected earning, instead of past earning, is based on our belief that what the acquirers are looking for is the potentials of the target.

In general, we believe that combining the static P/E ratio of the acquirers with the dynamic P/E ratio of the targets for valuation variables can accurately measure the relative valuation ratio in the M&A deals.

From Chart 6.3, we can see that the mean of the ownership variables is 0.77, above 0.5. It indicates that in China's A-Shares Stock Markets, according our research, private-owned enterprises have more internal motivation to extend development through industrial M&A transaction compared with state-owned enterprises. The average of the direction variables is 0.68, also above 0.5. This number demonstrates that most of the M&A deals happened in China's A-Shares Stock Markets are horizontal mergers and acquisitions, and it backs up the fact that currently in China, most of the private-owned enterprises are in the early stage of the enterprise development life cycle with more interest and demand in economies of scale than industrial chain consolidation or diversification. The average of the scale variables is 0.37. This figure shows that industrial M&A deals within China's A-Shares Stock Markets are mostly between big acquirers and small targets. Mean of the valuation variables turns out to be 4.3. This number reflects that compared with their targets, the acquirers actually are valued in a much higher level in terms of their P/E ratios. If M&A deals are done by stock swap, such overvaluation of the acquirers with respect to targets can generate cost advantage for the acquirers. Payment variables are averaged to be 0.45 with a median of 0.5. Payment in cash and stock, according to our research, is about half and half and 4 samples out of 31 were conducted by mix payment method. Thus we can see that the demand from the acquirers to minimize

financial pressure by paying partly by shares and the demand from the targets to cash out by selling holding assets coexist.

Before running linear regression, we also test the multicollinearity among all the independent variables. Results are shown as followed:

Chart 6.4: Multicollinearity test result

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Direction	.957	1.045
	Scale	.970	1.031
	Valuation	.929	1.076
	Payment	.904	1.106

a. Dependent Variable: Ownership

As shown in our test, VIFs of variables are all smaller than 3, meaning that multicollinearity doesn't exist among our variables. We also respectively take direction, scale, valuation and payment as dependent variables in the multicollinearity test, and all the results confirm our conclusion.

6.3.3 Dependent variables

As mentioned in 6.1, our methodology builds on the financials-based evaluation model to measure the performance of our selected M&A deals. According to Qingran Guo et al. (2008)'s book, the financial performance is a general concept which describes how the companies behave in four aspects – profitability, liquidity, growth and operation. When we interviewed the head of one Chinese investment bank Fountainburg Capital, David Yu, he commented that these four aspects are essential but not sufficient to constitute a fair financial evaluation system. One should also take the stock-based index into account if the study targets are listed companies. We believe that stock market in China is in weak form and therefore we decide not to include the stock price directly in our model. Instead, we take the so-called “per share” index as

well as the P/E ratio into consideration to capture the characteristic of being listed. He Wang (2008) pointed out that in an M&A deal, not only the benefit of the target's shareholders should be considered but also the benefit of debt holders. Hence, standing in the creditors' shoes, we take some more financial indexes which are the concern of the debt holders into our evaluation model. To sum up, we selected 8 aspects, namely Per Share, Profitability, Liquidity, Capital Structure, Solvency, Growth, Operation and Valuation in total to form our general financials evaluation model. Under each aspect, we choose or construct one or two financial indexes as the following chart shows:

Chart 6.5: Financial index selection

Financial Index Categories	Serial No.	Index
Per Share	1	$\frac{\text{Net Asset}}{\text{Shares}}$
	2	$\frac{\text{Earning}}{\text{Shares}}$
Profitability	3	Profit margin
	4	Return of equity
Liquidity	5	$\frac{\text{Cash flow from operating activities}}{\text{Revenue}}$
	6	$\frac{\text{Cash flow from operating activities}}{\text{Asset}}$
Capital Structure	7	$\frac{\text{Asset}}{\text{Debt}}$
	8	$\frac{\text{Equity}}{\text{Current Liability}}$
Solvency	9	Quick ratio
	10	Debt coverage
Operation	11	Account receivable turnover
	12	Inventory turnover
Growth	13	Revenue growth
Valuation	14	P/E ratio

Then we start constructing our dependent variable by 5 steps:

- 1) For all samples, based on the financial indexes listed in the Chart 6.4, we extract these 14 figures out from financial statements at Year $T-1$, Year $T+1$ and Year $T+2$, denoted as $FI(i, t, j)$.

$$i = 1, 2, 3, \dots, 31; \quad t = T-1, T+1, T+2; \quad j = 1, 2, 3, \dots, 14$$

Where:

i refers to serial number of sample;

j refers to the serial number of financial index

- 2) Based on the industries the acquirers are in, we calculate the industry average of each financial index using acquirers' listed peers for Year $T-1$, Year $T+1$ and Year $T+2$, denotes as $IFI(i, t, j)$

$$IFI(i, t, j) = Average [FI_{peer\ 1}(i, t, j) + FI_{peer\ 2}(i, t, j) + \dots + FI_{peer\ n}(i, t, j)]$$

- 3) After obtaining the financial indexes, we find out that not all 14 financial indexes are in the same scale and therefore cannot be simply averaged to be compared directly across Year $T-1$, Year $T+1$ and Year $T+2$. In this case, data standardization is needed to make all financial indexes comparable across years. In our research, we choose normalization to fulfill the requirement.

To do this, for each company we calculate the average (μ) and standard deviation (σ) for those 14 financial indexes based on historical data. And we normalize each FI into FIS, which is between [0, 1]. Intuitively, FIS shows that how this specific financial index “performs” compared with historical data.

$$FIS(i, t, j) = Normalize (FI(i, t, j), \mu_{i,j}, \sigma_{i,j})$$

Similarly, for each industry, we normalize each IFI into IFIS:

$$IFIS(i, t, j) = Normalize [IFI(i, t, j), \mu_{i,j}, \sigma_{i,j}]$$

- 4) Then for each acquirer, in order to measure the overall financial performance for Year $T-1$, Year $T+1$ and Year $T+2$, we average the FIS of all financial indexes at year t, denoted as $F1(i, t)$.

$$F1(i, t) = average [FIS(i, t)_1 + FIS(i, t)_2 + \dots + FIS(i, t)_{14}]$$

Similarly, we average IFIS, denoted as $F2(i, t)$, for Year $T-1$, Year $T+1$ and Year $T+2$.

$$F2(i, t) = \text{average} (IFIS(i, t)_1 + IFIS(i, t)_2 + \dots + IFIS(i, t)_{14})$$

Furthermore, as mentioned before, we drive out the industrial cycle effect $F2(i, t)$ out of financial performance $F1(i, t)$ to make a more scientific and accurate result. Finally, we get the Trend-Free Financial Index Score (TF-FIS), and denoted as $F0(i, t)$.

$$F0(i, t) = F1(i, t) - F2(i, t)$$

- 5) Now in order to measure the financial performance change due to the M&A effect, for each acquirer i , we calculate the difference between:
 - a) $F0$ at Year $T-1$
 - b) average of $F0$ at Year $T+1$ and $F0$ at Year $T+2$

Here, $F0$ at Year $T-1$ represents the pre-M&A performance of acquirer, and average of $F0$ at Year $T+1$ and Year $T+2$ represents the post-M&A performance of acquirer. The difference is marked as $\text{comscore}(i)$ in our research.

$$\text{comscore}(i) = [F0(i, T + 1) + F0(i, T + 2)]/2 - F0(i, T - 1)$$

And the results are shown as in Chart 6.6, and these comscores are used in our linear regression as dependent variables:

Chart 6.6: comscore (i) for 31 selected cases

Code	Name of Acquirer	comscore
000157	Zoomlion	-0.235
002144	Hongda Hi-Tech	0.203
600433	Guanhao-Hi Tech	0.091
002258	Lier Chemical	-0.077
002065	DHC Software	0.202
002434	Wangliyang Transmission Comp.	0.106
000525	Nanjin Red Sun Comp.	0.292
000967	Zhejiang Shangfeng Industrial Holdings Co.,Ltd.	0.345
002331	Anhui Wantong Technology Co.,Ltd	0.104
600499	Keda Clean Energy Co., Ltd	0.001
002131	Leo Group Co.,LTD	-0.129
300010	Beijing Lanxum Technology Co., Ltd	0.123
300057	Shantou Wanshun Package Material stock	0.009
300058	Bluefocus Communication Group Co., Ltd	0.614
002528	Shenzhen Infinova Limited	0.012
002498	Qingdao Hanhe Cable Co., Ltd	0.027
002439	Beijing Venustech Inc	0.267
300136	Shenzhen Sunway Communication Co.,Ltd.	0.210
300157	LandOcean Energy Service	0.356
600985	Anhui Leimingkehua Co.,Ltd	-0.001
002096	Hunan Nanling Industry Explosive Material Co., Ltd	-0.324
002467	Net263 Ltd	0.076
601789	Ningbo Construction Co.,Ltd	0.002
300210	Anshan Senyuan Road and Bridge Co., Ltd	-0.289
002340	Shenzhen Green Eco-manufacture Hi-tech Co.,Ltd	0.223
600699	Ningbo Joyson Electronic Corp	-0.019
300161	Rastar Group	0.077
002035	Vatti Corporation Limited	0.036
600804	Dr.peng Telecom & Media Group Co.,ltd	0.330
002130	Shenzhen Woer Heat-Shrinkable Material Co.,Ltd	0.006
002049	Tongfang Guoxin Electronics Co.,Ltd	-0.119

Chapter 7 Empirical Findings and Analysis

7.1 Variables statistic summary

Chart 7.1: Statistics summary

	Pre-M&A	Post-M&A	Performance Change
No. of Samples	31	31	31
Average F0	0.0356	0.1168	0.0812
comscore	Standard Error: 0.0353	Standard Deviation: 0.1967	Two-tailed test P Value: 0.03123
	95 % Confidence interval: (0.011923677 0.150407763)		t Statistic: -2.26015707

As we can see in the Chart 7.1, the average F0 of post-M&A is significantly higher than the average F0 of pre-M&A. By conducting t test of comscore, we get the two-tailed test P Value of 0.03123, and it means that under the confidence interval of 95%, the net performance change due to the M&A effect is significant, and shows that industrial M&A has positive impact on the listed firm's financial performance.

7.2 Regression and results

One step further, we run a linear regression of comscore(i) on the impact factors as followed:

$$\text{comscore}(i) = b_1 * \text{ownership}(i) + b_2 * \text{direction}(i) + b_3 * \text{scale}(i) + b_4 * \text{valuation}(i) + b_5 * \text{payment}(i) + u$$

And the linear regression results are:

Chart 7.2: Regression results

Variables	Coefficients	Standard Error	t statistic	P Value
Intercept	-0.044272332	0.09954101	-0.44476474	0.6603
Ownership	0.136262298	0.074120891	1.838379106	0.0779

Direction	-0.044244689	0.063550761	-0.696210216	0.4927
Scale	-0.184848	0.08125402	-2.274939739	0.0317
Valuation	0.020790508	0.007493695	2.774400173	0.0103
Payment	0.063758195	0.064367745	0.990530187	0.3314

As results shown in the Chart 7.2, the coefficient of ownership is 0.136, bigger than 0, and its P values is 0.08, which is smaller than 0.1. It indicates that ownership has significant impact over acquirers' post-M&A performance in 90% confidence interval, and private-owned enterprises outperform their state-owned peers. For valuation, its coefficient is 0.021 and significant in 95% confidence interval (P value = 0.01), meaning the higher relative P/E ratio (Acquirer/Target), the better performance this M&A deal can generate. And in terms of scale, the coefficient is -0.184848, smaller than 0, and significant in 95% confidence interval. It demonstrates that in M&A, transaction that acquirer and target have similar asset scales produces less value than transaction that acquirer is much bigger, in terms of asset scale, than target. And for direction and pay, their coefficients are -0.04 and 0.06 respectively, but their P values show that these two coefficients are not significant statistically and therefore mean that these two variables have no actual impact over the post-M&A performance.

In conclusion, the results we get from samples we collected confirm hypotheses 1 and 4, namely that ownership of acquirers and relative P/E ratio have significant impact upon the post-M&A performance. Our regression results also substantiate our hypotheses regarding how these two impact factors affect post-M&A performance of acquirers. For hypothesis 3, namely relative asset scale, has been denied and proved to be another way around. In the meantime, direction and payment, according to regression results, have no significant impact over post-M&A performance, thus hypotheses 2 and 5 cannot be demonstrated in our research.

7.3 Conclusions

Our final conclusions based on the linear regression results analysis are as followed:

- 1) Among all the industrial M&A samples we collected, 66.7% are about companies listed in SME board and the GEM board. Industrial M&A activities are enterprise restructurings with high marketization and their restructuring purposes are mostly to enlarger market shares, penetrate into upstream or downstream business chains, obtain up-to-date technologies, consolidate outstanding management teams or enter new markets. The frequent occurrence of industrial M&A in China SME and GEM board shows that small and median enterprise in China nowadays are mostly in growth period. Enterprises employ aggressive development strategies to quickly obtain market shares, stabilize market status and realize scale of economies.

Meanwhile, the average of comscores is significant above zero according to our research, indicating that the industrial M&A activities indeed exert positive effects in improving the company operating performance and are helpful to the SME in China from the perspective of financial health.

- 2) The coefficient of ownership is positive and significant, meaning that private-owned enterprises outperform state-owned enterprises in our study, and it confirms our hypothesis 1. In China's M&A markets, decision making processes in private-owned enterprises are more rationale. State-owned enterprises, in the other hand, has severer agency problem and their decision about M&A activities contains more motivations other than driving performance. For instance, the management team blindly seeks to enlarge the enterprise scale and increase the market shares but finally aim at gaining "political" achievement or making money for their pocket. Such motivations cause perfunctory due diligence and hence result in acquiring unsuitable target for the acquirer. In the meantime, in China, state-owned enterprises play more role than just a normal company. Some state-owned enterprises are asked by government to act as irrational acquirers to

acquire the operationally or financially underperformed targets just in order to solve problems of the targets such as long term unprofitability, or to facilitate their tax collection, and hence jeopardize the development of the acquirers. On the contrary, private-owned corporations take M&A action for their own benefit, and always run thorough due diligence before implementing their actions. Furthermore, their M&A choice are less affected by government, and easier to succeed.

- 3) The coefficient of relative valuation ratio is positive and significant, illustrating that the higher the ratio of acquirer's P/E over target's P/E, the better post-M&A performance of acquirer can be expected. Hypothesis 4 is confirmed, indicating that avoiding overpayment to target surely improves the performance of acquirer. What's more, acquiring target with rational price can boost the P/E ratio of acquirer, and that's beneficial for future issuance on the secondary markets.
- 4) The coefficient of relative asset scale is negative and significant, even though inconsistent with our hypothesis 3, meaning that the bigger the relative asset scale, the worse the post-M&A performance of acquirer. This result stands in the opposite of our hypothesis, and It demonstrates that in M&A, transaction that acquirer and target have similar asset scales produces less value than transaction that acquirer is much bigger, in terms of asset scale, than target. The high relative asset scale makes it easier and faster for the acquirers to absorb targets and generate synergies, and avoid certain managerial cost and employee placement issue during and after the process.
- 5) The coefficient of direction is not significant in our regression model. The reasons we summarize are from two aspects. Firstly, the samples of acquirers are in different stage of enterprise development life cycle and according to Yilong Yao et al. (2009), when a corporate is in growing stage, horizontal M&A performs best; when a corporate is in maturity stage, vertical and conglomerate M&A perform out; when a corporate is in declining stage, conglomerate performs best. Therefore

this might explain the insignificant of the direction impact factor.

Secondly, we think our original hypothesis may overlook fact that when the acquirers were seeking the targets, they shall not only consider how their experience, technology, team, etc. can be combined with the targets for synergy, but also the industrial trend and macroeconomics. Probably as our research hypothesis 2 indicates, in a horizontal merger, resource, manufacture / service, experience etc., would be transferred more fluently between acquirers and targets. For example, if the industrial potential of the target is not as positive as expected, or much worse, even though in a horizontal M&A transaction, the financial performance after the M&A can be very disappointing due to bad overall industrial setting. On the contrary, if an acquirer enter a “sunrise” business by vertical or conglomerate M&A, the financial performance of the acquirer can be boomed by buying the right trend even though there is no synergies generated in the M&A deal.

- 6) The coefficient of payment is not significant in our regression model as well. The reasons are twofold. Firstly, the samples we collected are limited in terms of number due to our strict criteria to select samples in Chapter 6.3.1. Secondly, payment variable, unlike the other four variables – ownership, direction, scale and valuation, which might be determined ahead of time – is probably negotiable between the acquirers and targets. When targets were choosing cash or shares, they were more thinking about their own benefit than the acquirers. This may generate noise that covers the relation between payment methods and post-M&A financial performance change as acquirers’ real payment decisions are more or less “distorted” by the targets.

7.4 Suggestions

Recent years in China’s A-Shares Stock Markets, M&A, especially industrial M&A, is much more active than ever. But during this period, some problems surface

and need our attention. Combining research on previous papers and our empirical study, we make following suggestions to players in China's A-Shares Stock Markets in order to drive the performance of M&A activities:

- 1) Different guidance should be given to difference kinds of M&A. As the positive comscore shown in our study, industrial M&A certainly generates extra value for acquirers, and we believe such M&A should be encouraged. Furthermore, for this industrial M&A, regulators should focus on protecting the interest of private-owned enterprises, reinforcing supervision on deals information disclosure and simplifying the approval process for M&A transactions. It would allow enterprises with M&A intention to fully grasp information about targets, such as revenue projection, choice of discount rate, and not to worry about the long, painful and costly approval process. It would facilitate the prosperity of M&A by reducing cost, leading to better and faster industry integration in China's A-Shares Stock Markets.
- 2) Acquirer should try its best to optimize its corporate structure. The positive coefficient of ownership shows that for some state-owned companies, it is a good idea to rationalize the composition of the board as well as introduce external investors. This approach would form democratic decision making on M&A deals, and would certainly reduce the agency cost. The governance that external capital brings in also forbids senior managers to rush into decisions out of personal interest and forces them to make thorough M&A investigations and prudent decisions, reducing the risk of M&A and generating better performance.
- 3) Acquirer should seize the right moment to run the M&A. The positive coefficient of relative P/E ratio tells us that when target is valued over its reasonable price, the overpayment would be costly for the acquirer. On the other hand, when the P/E ratio of acquirer is high, it would be a right time to use shares as payment for M&A activities, leading to an increase in acquirer's performance.

- 4) Proper promotion and innovation should be introduced in China. China's A-Shares Stock Markets is highly regulation-oriented, and M&A certainly is a big part of it. We believe in order to change the current economy structure and boost M&A to accelerate the industry integration, better and advanced regulations are needed. China's government should have incentives to upgrade the current regulations and give more freedom to China's A-Shares Stock Markets. In this way, M&A could be prosperous in China and generate long-term value for the whole country.

7.5 Research limitation and improvement

Our research conducts an empirical study on how the impact factors might influence the post-M&A performance of the acquirers during a selective period of time and comes to several conclusions. In our research process, we also realize that there are some limitations of our research which can be improved.

Firstly, our research samples are limited and this is because even though the industrial M&A transactions have become increasing active since 2008, its development period is still not long enough. What is more, we only move our event window till end of year 2012 for sample selection so as to have 2 fiscal years after the M&A deals for our data collection. Therefore, such sample limitations might lead to relatively less convincing regression result.

Secondly, due to the unavailability of the financial data in year $T+3$ if M&A deals took place in 2012, we decide to focus on the short term effect of those impact factors, meaning that only year $T+1$ and year $T+2$ are considered to measure acquirers' post-M&A performance. However, in some cases, it might take more than 2 years or much longer to have the synergies come into effect. Therefore, in our empirical study, we might to some extent undervalue the financial performance change due to short period of time. We highly recommend that the observation period to be extended to $T+5$ or even longer if research condition allows.

Finally, the motivation for conducting the M&A would be various. Therefore, using financials-based evaluation model to measure the post-M&A performance might overlook some aspects that are not captured in the financials, but contribute to the acquirers' operating soundness. For instance, some companies acquire the others for obtaining their profitable assets at once. Some acquire others for targets' soft competitiveness such as patent, unique technology or research ability. The benefit of latter M&A cannot immediately be captured by the financials-based evaluation. To be specific, there are always some influences, regardless positive or negative, can hardly be quantified and our financials-based evaluation model can be upgraded to be an advanced one which might measure the company performance in a more customized and detailed manner.

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Appendix 1: Examples of SAMPLE data collections

Guanhao-Hi Tech	T-1	T+1	T+2	AVG	STD	Norm.(T-1)	Norm.(T+1)	Norm.(T+2)
Net Asset/Share	4,12	3,33	2,67	2,42	0,80	0,983	0,872	0,623
EPS	0,06	0,24	0,34	0,11	0,13	0,350	0,841	0,962
ROE	0,02	0,06	0,12	0,07	0,06	0,204	0,447	0,788
Profit Margin	0,02	0,09	0,22	0,07	0,06	0,215	0,650	0,991
OCF/Revenue	0,04	0,07	0,08	0,10	0,15	0,337	0,406	0,453
OCF/Asset	0,02	0,03	0,04	0,07	0,14	0,363	0,378	0,396
Asset/Debt	2,96	2,94	3,58	2,32	0,84	0,779	0,771	0,933
Equity/Current Asset	1,11	1,10	1,52	1,00	0,33	0,634	0,618	0,945
Quick Ratio	1,25	1,57	1,31	1,07	0,48	0,646	0,851	0,691
OCF/Liability	0,07	0,09	0,13	0,15	0,25	0,380	0,405	0,473
AR Turnover	6,34	5,01	5,69	5,71	0,55	0,874	0,102	0,485
Inventory Turnover	2,99	2,69	2,62	3,00	0,40	0,490	0,219	0,171
Sale Growth	-0,05	0,03	0,00	0,10	0,15	0,160	0,330	0,244
PE	140,00	53,50	31,70	132,29	283,11	0,511	0,390	0,361
Average						0,495	0,520	0,608
Nanjing Red Sun Comp	T-1	T+1	T+2	AVG	STD	Norm.(T-1)	Norm.(T+1)	Norm.(T+2)
Net Asset/Share	2,09	5,95	6,67	2,80	1,63	0,332	0,973	0,991
EPS	-0,04	0,57	0,73	0,30	0,33	0,151	0,793	0,904
ROE	-0,02	0,10	0,11	0,08	0,06	0,041	0,645	0,733
Profit Margin	0,00	0,04	0,05	0,06	0,07	0,176	0,398	0,454
OCF/Revenue	-0,02	0,04	0,14	0,06	0,10	0,200	0,412	0,789
OCF/Asset	-0,02	0,03	0,10	0,04	0,07	0,181	0,433	0,780
Asset/Debt	1,25	1,54	1,53	1,81	0,51	0,134	0,298	0,290
Equity/Current Asset	0,28	0,60	0,69	0,63	0,30	0,128	0,471	0,580
Quick Ratio	0,54	0,60	0,44	0,79	0,35	0,238	0,294	0,159
OCF/Liability	-0,03	0,05	0,15	0,10	0,17	0,229	0,384	0,622
AR Turnover	65,06	35,89	20,42	26,57	18,00	0,984	0,698	0,366
Inventory Turnover	3,83	3,77	2,86	4,75	1,54	0,275	0,262	0,110
Sale Growth	0,07	0,24	0,01	0,33	0,50	0,306	0,430	0,263
PE	1 090,00	20,70	20,50	408,91	400,59	0,955	0,166	0,166
Average						0,309	0,476	0,515
Shenzhen Infinova Limited	T-1	T+1	T+2	AVG	STD	Norm.(T-1)	Norm.(T+1)	Norm.(T+2)
Net Asset/Share	9,49	6,17	4,65	6,06	4,63	0,771	0,509	0,380
EPS	0,18	0,18	0,03	0,47	0,34	0,197	0,197	0,096
ROE	0,02	0,03	0,01	0,17	0,17	0,186	0,202	0,167
Profit Margin	0,12	0,06	0,02	0,15	0,09	0,352	0,157	0,062
OCF/Revenue	-0,09	-0,03	0,03	0,08	0,12	0,070	0,165	0,345
OCF/Asset	-0,01	-0,01	0,01	0,08	0,11	0,192	0,193	0,260
Asset/Debt	30,30	10,82	12,35	12,54	10,58	0,953	0,435	0,493
Equity/Current Asset	1,02	1,13	1,16	0,95	0,16	0,686	0,882	0,911
Quick Ratio	26,34	8,25	9,66	10,46	10,09	0,942	0,413	0,468
OCF/Liability	-0,43	-0,15	0,14	0,25	0,38	0,040	0,155	0,393
AR Turnover	2,72	3,45	2,21	4,33	1,06	0,064	0,203	0,023
Inventory Turnover	0,92	1,91	1,23	1,59	0,30	0,013	0,857	0,115
Sale Growth	-0,27	0,27	-0,06	0,25	0,42	0,108	0,515	0,230
PE	79,30	89,20	82,90	97,76	49,39	0,354	0,431	0,382
Average						0,352	0,380	0,309

**Norm means normalized the corresponding data with average and standard deviation given in the middle columns.

Appendix 2: Examples of INDUSTRY data collections

Guanhao-Hi Tech	T-1	T+1	T+2	AVG	STD	Norm.(T-1)	Norm.(T+1)	Norm.(T+2)
Net Asset/Share	2,42	2,42	2,42	2,42	0,80	0,500	0,500	0,500
EPS	0,28	0,48	0,31	0,11	0,13	0,908	0,998	0,934
ROE	0,17	0,17	0,10	0,07	0,06	0,948	0,940	0,677
Profit Margin	0,12	0,11	0,09	0,07	0,06	0,794	0,751	0,667
OCF/Revenue	0,07	0,02	0,09	0,10	0,15	0,405	0,302	0,470
OCF/Asset	0,04	0,01	0,05	0,07	0,14	0,410	0,340	0,443
Asset/Debt	3,08	3,65	3,98	2,32	0,84	0,818	0,944	0,976
Equity/Current Asset	1,05	0,86	0,97	1,00	0,33	0,557	0,339	0,469
Quick Ratio	0,97	1,60	1,43	1,07	0,48	0,414	0,867	0,775
OCF/Liability	0,08	0,03	0,10	0,15	0,25	0,400	0,317	0,427
AR Turnover	7,09	7,21	5,31	5,71	0,55	0,994	0,997	0,235
Inventory Turnover	5,03	4,91	4,60	3,00	0,40	1,000	1,000	1,000
Sale Growth	-0,05	0,03	0,00	0,10	0,15	0,250	0,250	0,250
PE	85,83	39,56	39,56	132,29	283,11	0,435	0,372	0,372
Average						0,631	0,637	0,585
Nanjin Red Sun Comp	T-1	T+1	T+2	AVG	STD	Norm.(T-1)	Norm.(T+1)	Norm.(T+2)
Net Asset/Share	2,80	2,80	2,80	2,80	1,63	0,500	0,500	0,500
EPS	0,97	1,06	1,05	0,30	0,33	0,978	0,989	0,988
ROE	0,13	0,09	0,08	0,08	0,06	0,834	0,602	0,556
Profit Margin	0,10	0,07	0,06	0,06	0,07	0,740	0,564	0,524
OCF/Revenue	0,07	0,04	0,02	0,06	0,10	0,527	0,415	0,331
OCF/Asset	0,04	0,03	0,01	0,04	0,07	0,480	0,423	0,337
Asset/Debt	3,32	3,25	3,05	1,81	0,51	0,999	0,998	0,993
Equity/Current Asset	1,15	0,96	0,96	0,63	0,30	0,958	0,863	0,864
Quick Ratio	2,32	0,77	0,69	0,79	0,35	1,000	0,483	0,390
OCF/Liability	0,07	0,05	0,02	0,10	0,17	0,428	0,378	0,321
AR Turnover	1 422,48	430,33	5 776,13	26,57	18,00	1,000	1,000	1,000
Inventory Turnover	5,47	5,48	5,26	4,75	1,54	0,680	0,683	0,630
Sale Growth	0,00			0,33	0,50	0,257	0,257	0,257
PE	56,87	33,11	33,11	408,91	400,59	0,190	0,174	0,174
Average						0,684	0,595	0,562
Shenzhen Infinova Limited	T-1	T+1	T+2	AVG	STD	Norm.(T-1)	Norm.(T+1)	Norm.(T+2)
Net Asset/Share	6,06	6,06	6,06	6,06	4,63	0,500	0,500	0,500
EPS	0,28	0,27	0,35	0,47	0,34	0,286	0,283	0,365
ROE	0,10	0,08	0,10	0,17	0,17	0,344	0,305	0,335
Profit Margin	0,15	0,12	0,12	0,15	0,09	0,499	0,370	0,368
OCF/Revenue	0,05	0,08	0,10	0,08	0,12	0,386	0,513	0,580
OCF/Asset	0,03	0,05	0,06	0,08	0,11	0,304	0,370	0,405
Asset/Debt	7,95	8,01	8,90	12,54	10,58	0,332	0,334	0,365
Equity/Current Asset	0,88	0,85	0,87	0,95	0,16	0,344	0,262	0,313
Quick Ratio	7,36	3,12	3,20	10,46	10,09	0,379	0,233	0,236
OCF/Liability	0,07	0,11	0,14	0,25	0,38	0,327	0,362	0,388
AR Turnover	4,99	5,48	5,35	4,33	1,06	0,733	0,860	0,832
Inventory Turnover	3,26	3,10	3,09	1,59	0,30	1,000	1,000	1,000
Sale Growth	-0,27	0,27	-0,06	0,25	0,42	0,274	0,274	0,274
PE	52,76	52,37	52,37	97,76	49,39	0,181	0,179	0,179
Average						0,421	0,418	0,439

**Norm means normalized the corresponding data with average and standard deviation given in the middle columns.

Appendix 3: Regression Model Spreadsheet 1

			Sample			Industry					Y
Code	Anounced Time	Name of Acquirer	T-1	T+1	T+2	T-1	T+1	T+2	PRE	POST	comscore
000157	2008	zoomlion	0.74	0.51	0.55	0.55	0.57	0.58	0.196	-0.038	-0.235
002144	2010	Hongda Hi-Tech	0.44	0.53	0.66	0.39	0.37	0.32	0.050	0.253	0.203
600433	2010	Guanhao-Hi Tech	0.49	0.52	0.61	0.63	0.64	0.58	-0.136	-0.045	0.091
002258	2010	Lier Chemical	0.56	0.46	0.41	0.40	0.39	0.30	0.165	0.088	-0.077
002065	2011	DHC Software	0.47	0.56	0.61	0.53	0.53	0.37	-0.066	0.135	0.202
002434	2011	Wangliyang Transmission Comp.	0.56	0.43	0.32	0.41	0.38	0.29	0.144	0.250	0.106
000525	2011	Nanjin Red Sun Comp.	0.31	0.48	0.51	0.68	0.59	0.56	-0.374	-0.083	0.292
000967	2011	Zhejiang Shangfeng Industrial Holdings Co.,Ltd.	0.50	0.59	0.40	0.62	0.60	0.46	-0.112	0.233	0.345
002331	2011	Anhui Wantong Technology Co.,Ltd	0.55	0.39	0.32	0.50	0.46	0.36	0.051	0.155	0.104
600499	2011	Keda Clean Energy Co., Ltd	0.65	0.36	0.43	0.51	0.31	0.21	0.136	0.137	0.001
002131	2012	Leo Group Co.,LTD	0.59	0.31	0.37	0.50	0.39	0.36	0.088	-0.040	-0.129
300010	2012	Beijing Lanxum Technology Co., Ltd	0.51	0.38	0.43	0.69	0.71	0.62	-0.181	-0.058	0.123
300057	2012	Shantou Wanshun Package Material stock	0.49	0.32	0.35	0.46	0.42	0.36	0.037	0.045	0.009
300058	2012	Bluefocus Communication Group Co., Ltd	0.46	0.45	0.29	0.32	0.45	0.36	0.145	0.759	0.614
002528	2012	Shenzhen Infinova Limited	0.35	0.38	0.31	0.42	0.42	0.43	-0.069	-0.057	0.012
002498	2012	Qingdao Hanhe Cable Co., Ltd	0.39	0.49	0.28	0.34	0.34	0.27	0.051	0.078	0.027
002439	2012	Beijing Venustech Inc	0.37	0.58	0.55	0.48	0.42	0.40	-0.109	0.158	0.267
300136	2012	Shenzhen Sunway Communication Co.,Ltd.	0.54	0.36	0.38	0.30	0.29	0.29	0.248	0.458	0.210
300157	2012	LandOcean Energy Service	0.43	0.34	0.21	0.37	0.40	0.33	0.056	0.412	0.356
600985	2012	Anhui Leimingkehua Co.,Ltd	0.38	0.63	0.53	0.41	0.33	0.26	-0.030	-0.031	-0.001
002096	2012	Hunan Nanling Industry Explosive Material Co., Ltd	0.52	0.38	0.33	0.35	0.35	0.30	0.170	-0.154	-0.324
002467	2012	Net263 Ltd	0.48	0.60	0.40	0.47	0.42	0.42	0.005	0.080	0.076
601789	2012	Ningbo Construction Co.,Ltd	0.43	0.52	0.34	0.37	0.41	0.33	0.058	0.060	0.002
300210	2012	Anshan Senyuan Road and Bridge Co., Ltd	0.70	0.37	0.26	0.40	0.36	0.25	0.297	0.008	-0.289
002340	2012	Shenzhen Green Eco-manufacture Hi-tech Co.,Ltd	0.57	0.34	0.31	0.49	0.47	0.45	0.084	0.307	0.223
600699	2012	Ningbo Joyson Electronic Corp	0.72	0.66	0.56	0.63	0.58	0.50	0.092	0.073	-0.019
300161	2012	Rastar Group	0.44	0.52	0.39	0.52	0.49	0.42	-0.082	-0.005	0.077
002035	2012	Vatti Corporation Limited	0.63	0.71	0.69	0.35	0.41	0.35	0.280	0.317	0.036
600804	2012	Dr.peng Telecom & Media Group Co.,Ltd	0.41	0.74	0.71	0.70	0.80	0.59	-0.293	0.036	0.330
002130	2012	Shenzhen Woer Heat-Shrinkable Material Co.,Ltd	0.44	0.38	0.30	0.42	0.40	0.34	0.024	0.030	0.006
002049	2012	Tongfang Guoxin Electronics Co.,Ltd	0.55	0.60	0.49	0.37	0.26	0.24	0.178	0.059	-0.119

Appendix 4: Regression Model Spreadsheet 2

Y	Xs				
comscore	Ownership	Direction	Scale	Valuation	Payment
-0.235	0	1	0.34	1.70	0
0.203	1	0	0.46	5.98	1
0.091	0	1	0.57	10.22	0
-0.077	0	1	0.50	6.28	0
0.202	1	1	0.08	3.76	1
0.106	1	1	0.30	6.65	0
0.292	1	0	0.20	6.85	1
0.345	1	0	0.12	10.61	0
0.104	1	0	0.13	3.02	1
0.001	1	1	0.23	2.01	1
-0.129	1	1	0.25	3.13	1
0.123	1	1	0.09	2.28	1
0.009	1	0	1.09	3.81	0
0.614	1	1	0.08	3.86	1
0.012	1	0	0.25	1.01	0
0.027	1	1	0.04	2.45	1
0.267	1	1	0.19	6.79	0.5
0.210	1	1	0.82	21.30	0
0.356	1	0	0.11	2.78	0.5
-0.001	0	1	0.36	2.96	1
-0.324	0	1	1.96	0.80	1
0.076	1	1	0.01	3.14	0
0.002	1	1	0.44	1.65	0.5
-0.289	1	0	0.30	3.35	0
0.223	1	0	0.20	2.13	0
-0.019	1	1	0.44	0.82	0
0.077	0	0	0.16	2.98	0
0.036	1	1	0.23	1.25	0.5
0.330	1	1	0.36	5.88	0
0.006	1	1	0.79	1.78	0
-0.119	0	1	0.31	2.48	1