國立臺灣大學管理學院財務金融學研究所

碩士論文

Graduate Institute of Management

College of Financial

National Taiwan University

Master Thesis

併購類型與併購雙方規模之差異對績效之影響－以台灣市場為例

The Impacts on Performances Brought By Varied Types of Mergers and Firm Sizes: An Example of Taiwan Market

吳佩樺

Pei-Hua Wu

指導教授：陳聖賢　博士

Advisor: Sheng-Syan Chen, Ph.D.

中華民國 104 年 1 月

Jan, 2015

誌謝詞

自考上研究所後，我的生活遭遇重大變故，我只能從一個平凡的研究生急速轉換心態，犧牲了不少休閒的時間，也因此碩二這一年跟班上同學的交集明顯變少。雖然有點遺憾，但在這過程中，我仍然遇到了很多貴人，老師、同學、系辦等給我的各種幫助都讓我非常感動，包括課程上的協助、打工機會的提供等，讓我能在不休學的情況下順利完成學業。

因為家裡出事，同時我也面臨步入職場的壓力，不得不將撰寫論文的順位往後延，直到碩三下學期才得以完成這篇論文。我真的很慶幸指導教授能體諒我的處境，並給予我充足的時間準備論文審查及口試，另外也感謝我的家人能允許我在口試前不回家幫忙，讓我可以專心做最後的口試準備。

很高興終於能完成這篇論文，心裡的一個擔子終於能放下了，祝福我週遭的親朋好友都能夠健健康康，平平安安的渡過每一天！

吳佩樺　謹上

中華民國一〇四年四月七日

中文摘要

過去國外有很多研究分析併購案，包括水平併購、垂直併購等併購類型對績效的影響，而國內的論文也多以歐美的併購案例為主，就算有以台灣為基準進行研究，也多僅針對特定產業或特定併購方式，較少針對整體台灣市場同時進行水平、垂直併購分析，且普遍有樣本數不足的問題；至於在併購規模部分，則多以利益分配比例或併購成敗為主軸進行分析，如 Damodaran(2012)認為大公司併購小公司較容易成功，反之則多以失敗告終，而本文則是同時探討大公司併小公司及小公司並大公司這兩種情形，以水平併購、垂直併購、跨業併購這三種併購類型，並擴大樣本數，結合併購規模來對台灣整體市場進行分析。

由於台灣經濟新報(TEJ)於 2014 年推出併購資料庫，並與公開資訊觀測站及新聞報導交叉比對，使樣本數大幅增加至 872 個，解決過去台灣併購資料庫中，樣本數過少以至於難以進行分析的困境。本文可將樣本數分為六組，探討這六組的差異。

根據單因子變異數分析結果，產業關聯度較低的併購案會使主併公司的短中長期併購表現較佳。此外，迴歸模型也證明本文挑選出來的七個自變數對股價報酬有顯著影響，尤其對長期股價報酬有明顯的影響。而當主併公司的規模大於目標公司時，營收成長率反而較差，反若主併公司的規模較小，營收成長率會較佳。

關鍵字：相對規模大小、併購

Abstract

A lot of foreign papers have been focusing on effects brought by different types of M&A on performance, including horizontal, vertical and conglomerated acquisitions. Papers published by Taiwanese scholars usually considered about foreign M&A cases and focused on a particular industry or M&A type. It is hard for most researches to focus on horizontal and vertical M&A at the same time. As to the firm scale, a common paper usually only analyzed distributions of M&A benefit for acquirers or target firm, or the key factor of successful M&A.

Owing to the launch of TEJ M&A database in 2014, this paper increases the sample sizes and classifies these data into six groups, trying to find the relationship between all of them. This new database solves the small sample size problem.

The results suggest that the lower industrial relationship can create better M&A performances than the higher industrial relationship. Also, the regression model shows a striking effect of the seven independent variables on performance in the stock annual rate of return and the revenue growth rate, especially in the long term period. Besides, the bigger the acquirer size, the worse the revenue growth rate and vice versa.

Key Words: Relative size, M&A

Contents

誌謝詞 I
中文摘要 II
Abstract III
Chapter 1 Introduction 3
Chapter 2 Theory and Hypotheses 3
2.1 Resourced-Based Theory 3
2.1.1The Development of RBV 3
2.1.2 Core resources and capabilities 6
2.2 Merger and Acquisition 10
2.2.1 Definition and Category 10
2.2.2 M&A Motivation 11
2.2.3 M&A Synergy 17
2.2.4 M&A Performance 21
2.2.5 Relative Firm Size 25
Chapter 3 Research Design and Methods 29
3.1 Independent Variables 29
3.1.1 Independent Variables 30
3.1.2 Dependent Variables 32
3.2 Statistical Method 34
3.2.1 One-Way ANOVA 35
3.2.2 Regression Analysis 35
Chapter 4 Research Results 36
4.1 Hypotheses Results 36
4.1.1 Hypothesis 1 36
4.1.2 Hypothesis 2 39
4.2 Annual Rate of Return 41
4.3 Financial Dependent Variables 42
Chapter 5 Conclusion 44
Reference 45

List of Figures

Figure 2-1: The Process to Explore the Company's Resource 7

List of Tables

Table 2-1: Classification of Resource 9
Table 2-2: Scholars advocated M&A motivations 15
Table 4-3: Post Hoc Test Results (t=2) 37
Table 4-4: Post Hoc Test Results (t=3) 38
Table 4-5: Post Hoc Test Results (t=4) 38
Table 4-6: ANOVA Results (Hypothesis 2) 39
Table 4-7: Post Hoc Test Results (t=1) 39
Table 4-8: Post Hoc Test Results (t=2) 40
Table 4-9: Post Hoc Test Results (t=3) 40
Table 4-10: Post Hoc Test Results (t=4) 40
Table 4-11: Regression Results (Annual Rate of Return) 42
Table 4-12: Regression Results (*SGR*) 43

Chapter 1 Introduction

A lot of foreign papers have been focusing on effects brought by different types of M&A on performance, including horizontal, vertical and conglomerated acquisitions. Papers published by Taiwanese scholars usually considered foreign M&A cases and focused on a particular industry or M&A type. For example, Chang (2012)'s paper only emphasized on European pharmaceutical industry, and there are many ones like his. So it is hard for most researches to focus on horizontal and vertical M&A at the same time. As to the firm scale, a common paper usually only analyzed distributions of M&A benefit for acquirers or target firm, or the key factor of successful M&A. For instance, Dammodaran (2012) believes that the result of a case about larger acquiring firms merge smaller target firm is usually successful, and the other kinds mostly failed. But this study is about exploring the two kinds of relative size and three M&A types at the same time, and analyzing their essences and what affects they actually bring to the whole Taiwan M&A market.

Chapter 2 Theory and Hypotheses

2.1 Resourced-Based Theory

2.1.1The Development of RBV

An early concept by Penrose (1959) argued about a previous resource-based

conceptual literature based on economic model. He advocated that a competitive enterprise must consider the external environment and internal resource capacity. The external environment can mean capital scales, talent staffs or members, investment opportunities, patents, competitors and high barriers to entry…etc. As for the internal resource capacity, it may be productions, technologies and management incentives and resources that are closely related to the development of the company.

Then Wernerfelt (1984), based on the concept Penrose argued, formally proposed "Resource Based View". Unlike those perspectives from product theories, Wernerfelt analyzed company resource management with the perspective of resource theories. There are two sides to one coin, and this is just like resource and product, or the product market and the factor market in economics.

Since the finished products often require resources to assist them fitting into the market, the company has to develop the most advantageous resources in market and create resource position barriers to form a long-term and constant abnormal returns. Lado, Boyd and Wright (1992) also supported this argument, yet he also further defined "resource" as: 1. Management capacity and strategy development 2.Resource capacity 3.Transforming capacity 4.Output capacity. The transforming capacity includes innovation and organizational culture. As long as company has all of the above resources, it will be able to maintain its sustainable competitive advantage.

Based on the perspective of firm theory, Barney(1986), to do further analysis, claimed that a firm must be in a dominant position in terms of resources, prompting the formations of imperfect competition market, in order to facilitate its development strategy and build a lasting nature and competitive advantage. In addition, Barney agreed to the argument of Wernerfelt that enterprise culture is one of the most important resources. As long as an enterprise culture has its value, scarcity and hard mimicry, it can maintain a competitive advantage.

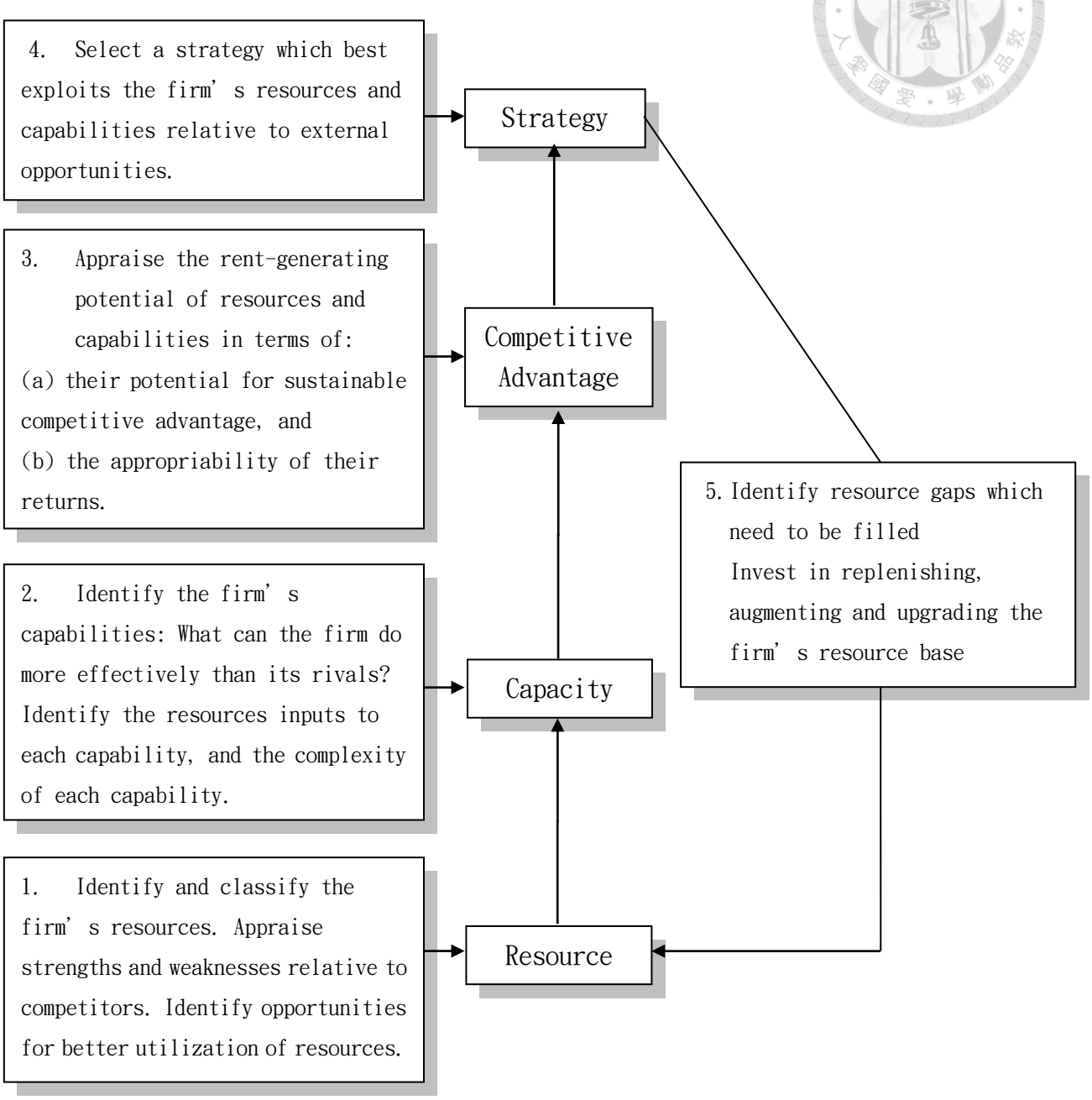
In the past 30 years, the ideas about how businesses formed lasting competitive advantage already were proposed, but until Grant (1991) pooled literatures about analyzing resource-based views, those concepts were hence formally defined as "resource-based theory". Latter the theory system also keeps being developed even more perfectly. In addition, the literature embodied the resource-based theory is gradually released. For example, Peteraf (1993) considered the competitive advantageous resources must comply with the following conditions: 1.Heterogeneity 2.Imperfect mobility 3. Ex post limits to competition 4.Ex ante limits to competition. As for the modern resource-based theory, Collis and Montgomery (2008) considered business as a collection of tangible, intangible assets and capabilities, so there is not a company will have any experience, asset, technology, and organizational culture the same as ones from the other company. As long as the company owns the suitable

resources, it has become synonymous with success.

In summary, the initial resource-based theory was started from Penrose (1959), scholars after Penrose specified the theory, and analyzed the relationship between resource and competitive advantages, then selected the key resources and the corresponded strategies. However, the connotation of resource-based theory doesn't have a unified classification, and the insights are also different. Following that, this paper will analyze and focus on the respective views of resource-based theory from prior literatures.

2.1.2 Core resources and capabilities

As the company's strategy varies from resource to resource, Grant (2001) considered the resource-based view focuses on reviewing the in-company. The internal resources and competitive capacities will determine the business strategies, so Grant (2001) apply the resource-based theory to strategy analysis. The relationship between resources and competitive capacities can separate five steps: 1.Classify the company resources and analyze the industry position 2.Analyze the capacities and match them to strategies 3.Combine resources and capacities to assess the potential earning power 4.Consider outside opportunities to decide the strategies 5.Create a new resource to maintain industrial position.



Reference: Grant (2001)

Figure 2-1: The Process to Explore the Company's Resource

Among previous literatures, Chatterjee and Wernerfelt (1991), Lado, Boyd, and Wright (1992) considered resources and capacities as the same kinds, directly analyzing the classification. And Penrose (1959), Grant (1991), Wu (2000), Collis and Montgomery (2008) considered resources and capacities as two different kinds, scholars divided them into two parts, and discussed further.

Chatterjee and Wernerfelt (1991) separated resources into tangible resources, intangible resources, and financial resources. The financial resources are included internal and outer capitals; Grant (2005) classified financial resources to tangible, intangible resources and human resources; Collis and Montgomery (2008) supported Chatterjee and Wernerfelt (1991) with that the only difference is the third classification, and they also advocated that the capacity of a company is more important than human resources; Barney (1986) classified resources by the organizational strategies including tangible& intangible resources, human resources and organizational resources. The organizational resources include the organizational system, process and the formal or informal relationship; Wu (2000) classified resources to asset and capacity, the former is tangible and intangible asset, and the latter is personal and organizational capacity. (Table 2-1)

Table 2-1: Classification of Resource

Asset	Tangible Asset	Physical Asset	PP&E
		Financial Asset	Cash, Security
	Intangible Asset	Brand/Goodwill, Intellectual Property Rights(Trademark, Patent, Copyright), License, Contract, Database…etc.	
Capacity	Personal Capacity	Professional and Technical Capacity Managerial Capacity	
	Organization Capacity	Business operation capacity Technical innovation and commercialization capacity Organizational Culture Organizational memory and learning	

Reference: Wu (2000)

The definition and classification of resources are different from paper to paper, and the specification of resources can affect the continual competitive advantages, so this paper needs to analyze further. Barney(1986) considered resources must have heterogeneity, instead of mobility, scarcity, inimitability; Grant(1991) believed that long-lasting, non-transparency, non-transferability, inimitability are the specifications of resources; Hamel and prahalad (1994) based on resource-based theory, considered the scarcity, high value, inimitability, the capability of using resources are the specification of resources, and are also the key to form competitive advantage; Collis and Montgomery(2008) believed that the resources should be difficult to replicate, out slow, to replace, better than the competitors, employees and the corporate firms can't decide the company's value. Which "employees and the corporate firms can't decide the

company's value". It means the key employee leave the company doesn't cause too much impact onto the operation, or if the suppliers have an accident, there are still alternatives available to avoid the shortage.

In summary, the resource-based theory investigated the impact of value of company on company strategy, analyzed and classified resources. Then match the resources to the previous literature to find out the necessary specification. If matched more, on behalf of the more competitive company, the company can create a continually competitive advantage. Otherwise, if matched less, the company needs to take into consideration to acquire those resources, or make up the weakness by organizational capacities.

2.2 Merger and Acquisition

2.2.1 Definition and Category

The so-called M&A can be divided into Merger and Acquisition, the former refers to the acquirer purchase the shares or assets, and acquire the control right; the latter refers to the firms that follow the relevant laws to combine into one company (Wang, 1991; Chung, 2000; Wu, 2002). According to Taiwan's M&A law, M&A is divided to merger, acquisition and stock conversion. The acquisition can be divided into acquisition of assets and acquisition of stock, the former belongs to the trading behavior

and don't take the potential risks of target firm. The latter means the acquirer directly or indirectly purchases part or all the shares from target firm (Wu, 1997).

In the M&A types, Elgers and Clark(1980) considered the acquisition type can be divide into horizontal M&A, vertical M&A, congener M&A, conglomerate M&A. The congener M&A means the two firms are in the relevant industry, but the business nature is not the same, it be divided into market expansion (different technology and same target market) and product expansion (same technology and different target market), and pure congener expansion. Vertical M&A will be segmented into forward and backward integrations, the former refers to acquire lower cost of raw materials, and the latter refers to control the marketing channel or market information, thereby reducing the cost of sales. The advantages of vertical M&A are including reducing transaction cost, ensuring the source of raw materials, improving the capacity of R&D.

2.2.2 M&A Motivation

M&A has been practiced for years in domestic and abroad markets, and the relevant issues are complicated and high correlation. For instance, the legal system and cultural environment in different countries can impact on the empirical results, and the M&A methods or industry category will also lead to different results, so many scholars devoted into the relevant researches, and use different methods to analyze these

situations. In M&A motivation, scholars have different views because of the domestic legal system, non-efficiency, shallow-plate in the stock market. Next we will discuss the opinions of foreign literature first, then back to the domestic literature.

In terms of foreign scholars, some scholars based on the single M&A method to assess the motivation, for instance, Cook (1986) considered horizontal M&A can create economic of scale and lower unit cost in order to improve operational efficiency; Opler (1990) pointed out syndicated M&A can have financing benefits and disperse the industry risk; Willianson (1973) based on transaction cost theory, advocating that minimizing the product and transaction cost are the major M&A motivations. Some scholars, such as Weston and Chung(1983), Cooke(1986), Brigham(1986), Gaughan (1991), Brouthers, Hastenburg and Ven (1998), only worldwide listed several motivations, and the general public believes that the tax, operational synergy, financial synergy, economics of scale, agency problem, and so on, are the major M&A motivations. In terms of economics scale, UNCTAD (2000)、Weston, Mitchell, and Mulherin (2004) believe that it is exactly the fun part of horizontal M&A. Horizontal M&A can increase market concentration and the bargaining power.

Along with the development of technology and internet, the know-how, patent, innovation and technology are becoming more important than ever, especially in highly

competitive industries. Companies must increase new assets and improve the technology to maintain the competitive advantage in the market. However, companies need to spend a lot of time on R&D departments, since the economic costs may higher than purchasing those technologies outside. (Lester, 1985; Foster and Muller, 1989; Noori, 1990; Cassiman et al, 2005; Puranam et al, 2006; Birkinshaw and Nobel, 1998) In addition, after obtaining the technology from target firm, acquirer can based on the technology to R&D the new technology. It not only effectively shortens the lead time, but also avoids the uncertainty during the initial stage, such as biotechnology or high-tech industry.(Hagedoorn and Duysters, 2002; Cloodt et al, 2006; Haro-Dominguez et al, 2007) Based on resource-based theory, some industries rely on the additional benefits by social networking, but cultivate the social networking usually need long-term accumulation. So acquirer can obtain the social networking by M&A. Acquirers can increase competitive advantage through effective management. (Wernerfelt, 1984; Lusch, Harvey, and Specier, 1998; Das and Teng, 2000; James, 2002; Kiessling and Richey, 2005) In addition, American empirical researches Walsh (1988), Ravenscraft and Scherer (1987), Amihud and Lev (1981) generally supported the managerialism, which is one of the hugest M&A motivations.

Among M&A motivations advocated by domestic scholars, parts of motivations were as the same as ones provided by foreign scholars, including Wu (1991), Yu and Jung

(1998). The difference between domestic and foreign scholars was that some domestic scholars divided motivations into different categories, such as, Wei(1992) considered the motivations can be classified to operating factors(economics of scale, purchasing assets by lower cost, accelerating business growth, diversifying the risks, market concentration), management factors(financial synergies, investment benefits, management experiences, ensuring the source of raw materials, obtaining specific assets), and upgrading industry(increase R&D, obtain the patents).

Lee(2001) and Guo (2008) divided motivations into the growth motivation and defensive motivation, the latter considered research report from PwC/EIU, classifying the motivations of financial institution to inside and outside factors. The inside factors included market concentration, enterprise growth, new technology, and the outside factors included economic growth, regulatory liberalization, the demand of customers increased, competitors increased, and so on. Wu (1992) analyzed prior foreign literatures, considered the motivations can divided to value maximization and non-value maximization. The theory of value maximization includes efficiency theory, exclusive theory, and the theory of non-value maximization includes managerialism. Wu (1992) analyzed Taiwan market and found that the primary motivations are market concentration, economics of scale, monopoly power. According to Trautwein (1990), the so-called economics of scale means the company achieves the best production scale

by M&A, it can reduce the production cost or improve the production efficiency, then increases the competitive capacity.

However, the empirical results from Chung (1980), Sun (1989), Lin (1990) did not support the view of tax benefits, they thought the tax benefit is not a motivation. The difference between domestic and foreign paper might be the different research method. Wu (1992) mentioned that Taiwan lacked database in the early time, and the scholars only took into consideration the questionnaire method, but the respondents may be reluctant to admit the motivation. Moreover, though tax saving is not a primary reason, but it is still one of the arrangements in M&A process.

Table 2-2: Scholars advocated M&A motivations

Foreign Paper	
Weston and Chung(1983)	Tax, inefficient management, operational synergy, financial synergy, strategic planning, agency problem, market power.
Lester(1985)	New technology.
Brigham(1986)	Synergy (Including operating economics of scale, financial economics of scale, different management efficiency, increasing competition), tax, purchase asset by lower cost, diversification.
Cook(1986)	Horizontal M&A can expend economy of scale and reduce the unit cost.
Cooke(1986)	Synergy, control whole industry production, company growth, acquire specific asset, purchase asset by lower cost, market concentration, diversification, efficiency.
Foster and Muller(1989)	Acquisition new system.
Opler(1990)	Syndicated M&A has the benefits for financing

	and decentralized industrial risks.
Gaughan(1991)	Synergy, Diversification, Hubris hypothesis.
Wernerfelt(1984) Lusch, Harvey, and Specier(1998)	Value of intangible asset.
Das and Teng(2000) James(2002)	Acquires can acquire valuable resources and do efficient management.
Kiessling and Richey(2005)	Social networking.
Noori(1990) Hagedoorn and Duysters(2002) Cloodt et al(2006) Haro-Dominguez et al(2007)	In a highly competitive environment, the cost of getting the key technical resources from outside is lower than R&D from inside.
Birkinshaw and Nobel(1998)	Technical knowledge, Sustain acquirer competitive advantage in the market.
Domestic Paper	
Lin (1989)	Increase the profitability, enhance competitive, accelerate growth, synergic benefits, and acquire trademark or patent attorney.
Wu (1991)	Business growth, achieve the benefit of economics of scale, enter new market by M&A, diversification, investment behavior.
Wei (1992)	Operating factors(economics of scale, purchase asset by lower cost, enhance the growth of company, step into international market, diversification, market concentration)、management factors(financial synergy, investment privilege, ensure the sources of raw materials, access to specific assets), industrial upgrading factors(enhance the capacity of R&D, obtain patents, managers positive factors).
Yu and Chang (1998)	Increase market power, financial motivation, enhance growth, technology, finding stable developing environment.
Huang (2000)	Transaction cost is one of the vertical M&A strategies. As long as the purchasing cost is smaller than self-made, company makes the M&A strategy is more beneficial.
Lee (2001)	The M&A motivation is divided to two side, one is growth and defense, the growth motivation is classified into introduce technology, increase channels,

	diversification; the defense motivation is classified to three parts: 1.Prevent rivals to monopoly market 2.Agginst hostile takeover, the target firm increase the difficulty of being takeover 3.Tarket firm seek friendly acquirer to force hostile acquirer back.
Xia (2013)	Government uses the differential treatment for financial institution, making those firms have non-competitive benefits about tax, new business, increasing new branches by M&A, triggering a wave of financial consolidation.

2.2.3 M&A Synergy

Seeing back on the foregoing, the M&A motivations varied from the industry to industry. No matter what motivations were, the acquirer generally considered the M&A performance is better than before. The M&A synergy will be different between vertical, horizontal and conglomerate M&A, so this paper first discuss the characteristic of the three M&A types, then conduct a comprehensive comparison.

According to the definition of Porter (1980), the so-called vertical M&A means combining firms together for those that were originally separated in the production, distribution and sales. Firms can draw on internal procedure to achieve the economic goals. Hill and Jones (1995) advocated that firms need to produce its own inputs in vertical M&A, including forward and backward integration; UNCTAD (2000), Weston, Mitchell, and Mulherin (2004) considered the vertical M&A is that two firms are in the same value chain, but in the different stages. It can classify further to backward and

forward integration.

Vertical M&A can achieve a high degree of communication and link to an operating entity, and it can beat rivals and build the entry barriers (Liu, 2012). The entry barriers that vertical M&A creating are divided into structural entry barriers and strategic entry barriers. The latter refers to the firms can prevent other firms enter into the market by extend production capacity, price limitation, predatory pricing (Chuang, 2005). Basically, these entry barriers can relatively increase the transaction cost of rivals, forcing competitors out of the market. It's because firms can control the circulation of goods after M&A, the rivals are hard to acquire raw materials from suppliers, and this situation is increasing the production cost and forcing the rivals out of the market. In addition, the firm after vertical M&A can enhance the marketing or R&D ability, ensuring the source of raw materials. (UNCTAD, 2000; Beard, Kaserman and Mayo, 2001: Weston, Mitchell, and Mulherin, 2004)

In the horizontal M&A part, UNCTAD(2000)、Weston, Mitchell, and Mulherin(2004) considered it means the two firms are in the similar business areas and competitive each other. It can create economics of scale, increase market concentration, reduce the costs, enhance market competitiveness; Chen(2004) believe that the advantages of horizontal M&A are including economics of scale, increase market

concentration, enhance leverage capacity, and so on.

In addition to vertical and horizontal M&A, conglomerate M&A is one of the other options, such as Sue (2002) extended the concept of Amit and Livnat(1998) that the motivation of diversification can be divided into synergy and financial motivation. The former is considered to increase the market concentration through diversification and stabilize the competitive advantages, and the latter referred to diversify operating risks and use a variety of financial methods to increase investment return; Teece(1980) believed that the failure of allocation of resources is also one of the reasons for diversification. Surplus, resources cannot be successfully traded in the market, and the only way to consume the resources and acquire larger profits is diversification. These resources are divided to two categories: 1.Transaction cost is too large in the market 2.The resources is unable to completely be divided. Lewellen(1971) believed that the conglomerate M&A can create the financial benefits. If the pre-merger companies had debt, the mutual benefits from M&A could reduce the default risk of bonds. Firms can make use of co-insurance to supply money for offsetting the shortage, and decreasing the probability of bankruptcy.

Campbell and Park (2005) considered that it need to conduct prudent assessment before the conglomerate M&A, including the values of the two firms, profit, the impacts

on the current business, the new leader, and so on. Unlike horizontal or vertical M&A, conglomerate M&A is not in the same industry. The acquirers are not familiar with the industry of target firm, so hastily processing M&A may not diversify risks and even increase the risk.

Which M&A methods is better, it need to consider industrial characteristic, economic situation, and so on. Stigler (1951) advocated that whether a company does vertical M&A is closely related to the life cycle of industry and market growth rate. When the market growth rate is higher, the industry tends to divide the work vertically. When the market growth rate is lower, the industry tends to merge together vertically. Fan and Goyal (2006) drew on the IO(Input-Output) table that created by BEA(Bureau of Economic Analysis) to analyze the vertical correlation in 1962-1996. They considered the wealth effect of vertical and horizontal M&A are similar, but the wealth effect of vertical M&A is larger than conglomerate M&A; Markides and Ittner(1994) compared to the international and domestic M&A and considered higher industry correlation can create more valuation than lower industry correlation. However, Seth (1990), Linn and Switzer (2001) considered the two situations are not just significantly different, but the relationship between higher industry correlation and long-term performance does not exist positive correlation; Kim and McConnell (1977), Beattie (1980) focused on conglomerate M&A, the former pointed out M&A can increase the

debt capacity, and the latter considered the operating risk as being decreasing significantly, but the valuation of company doesn't increase.

2.2.4 M&A Performance

The acquirer wants to generate synergy by M&A, these synergies can be divided into financial performance, business performance and organizational performance. In a measure of financial performance, it can analyze by sales growth and EPS (Earnings Per Share). In a measure of company performance, it can analyze by market share, introduction of new product, product quality, market efficiency, production values. In a measure of organizational performance, not only contains the above measure index, it also includes the conflict of organizational objectives, the impact of the selection by shareholders. (Ramanujam and Venkatraman, 1986)

Because the financial performance information are easier to obtain, and do not easily be effected by subjective judgment, it's widely used by scholars. Such as, Kusewitt (1985) made use of ROA and the return ratio as the dependent variable for regression analysis, relative size, industrial association, M&A timing, business cycle, means of payment and the profitability of target firm as the independent variables.

According to the empirical results, the first five indexes are positively correlated to M&A performance. Stillman (1983) once used the stock return ratio to test market

synergy, he focused on the relationship between horizontal M&A and the monopolistic market, and the results showed the monopolistic situation had not occurred. Fowler and Schmidt (1989), based on a sample of 42 manufacturing industries, used the abnormal returns of the ordinary shares and the equity abnormal returns to measure the financial performance. And the results showed that a long-term financial performance had displayed a downward trend. Healy, Palepu and Ruback (1992) used cash flow to analyze pre- and post-M&A performance, pointed out that the ROA has significantly improved, but the operating cash flow didn't change significantly after M&A. But if any two firms have industrial association, the operating cash flow changes significantly after M&A. Woo and Willard (1983) considered financial and company synergy at the same time. They selected 14 kinds of quantitative indicators, including return on investment, gross margin, sales, cash flow to investment, market concentration, the difference of ROI, product creation,…etc. Seth(1990) focused on operational synergy and 102 M&A cases published during 1962-1979, showed that operating cash flow increases 11%, and the financial synergy abnormal return increases 10%. Seth proved that M&A can create a significant return, but the M&A performance will not be different to whether they are same industries or not. Mueller (1985) used the operational synergy to analyze the M&A performance, measured the change of market concentration before and after M&A. The results showed that the market concentration of the target firm did not

increase, instead, decreased in a horizontal and conglomerate M&A. Ghosh (2001) studied 315 M&A cases in 1981-1995, he used cash flow to asset, sales growth rate, the number of employees to sales, operating expense to sales as measurement indexes, assessed the operating synergy of acquirer and researched on what kind of M&A had a positive effect on the acquirer. The results showed that the operating synergy didn't significantly be better than those same size firms from the same industry. The results also showed that the use of cash payment could bring a larger cash flow, yet using stock payment would bring smaller cash flow to a company. Others such as Stern and Steward Company(1991)、Hitt, Harrison, Ireland and Best(1998)、Malateta(1983)、Bradley, Desai and Kim(1998)、Ooghe and Balcaen(2000), also had their views respectively, but they still commonly supported that M&A can increase the synergy.

Compared the conglomerate M&A to the ones from the same industry, Weston and Chung(1983), Shelton(1988) considered that the same industry M&A performance was better, because each other had the similar organizational structure and job content, acquirer that could improve the operating efficiency of target firm by M&A, creating the different efficiency. However, Seth(1990) analyzed M&A performance from the aspect of risk reduction, considered the conglomerate M&A could stabilize the cash flow and reduce the variation of return, then start decreasing the operating risk and increasing the synergy.

Among the factors that actually affect a M&A performance, some scholars advocated that different payments also impact M&A performances, such as Harris and Ravenscraft(1991) explored the different payment of cross-border M&A, advocated that cash payment can create higher return; Eckbo, Giammarino, and Heinkel(1990) pointed out that a mixed payment can acquire more excess returns than a single payment. Kitching(1967) started from production side, believed the combination of production equipment can produce the greatest synergy, followed by technology, production, organization and finance. And this research result is similar to what Chatterjee(1996) concluded as.

If we explore the previous domestic M&A cases, we will see almost all the empirical researches support the existence of synergy. Wu (1992) figured the possible reasons for the empirical results, including: 1.Taiwan relies mainly on SMEs (Small and Medium-sized Entities), yet their operative scales still do not reach an economy of scale. So, they can achieve the target by M&A. 2. Horizontal M&A predominate in Taiwan, and some scholars believe horizontal M&A can create operational synergy. This conclusion is fairly close to points of view from Scherer (1980), who advocated that the market is getting close to a perfect competition, and the economic benefits will become smaller, otherwise, when the market is getting close to imperfect competition, the economic benefits become larger. However, Goyal (2006) believed that vertical M&A

has obvious positive wealth effects on average, and this view is different from ones by domestic scholars. Due to different national cultures, there could be cultural affects that influent their basic ideas.

Wu (1992) analyzed the results of empirical researches in Taiwan which showed that compared with the operational synergy, financial synergy is not immediately visible, so the financial synergy is not the primary M&A motivation. As for the cross-border M&A in Taiwan, Huang (2011) believe the M&A performance in the first two years is better, but the third year is either better or worse. This paper infers that, the cross-border M&A performance in Taiwan is better in a short term, but remains to be seen in a long one.

2.2.5 Relative Firm Size

As this paper mentioned before, the acquirer wants to obtain synergy by M&A, while prior scholars theoretically and empirically confirmed that the M&A performance of acquirer is smaller than target firm. If two firms both are public companies, the M&A performance of target firm is better than the one for acquirer. For instance, Agrawal, Jaffe, and Mandelker (1992) analyzed the M&A cases published during 1955-1987, and found out the acquirer loss is 10% in an average. With regards to the profit and loss statuses of acquiring and target firm, scholars generally agreed with that, the relevant

sizes will affect the financial and operational synergy. (Lubatkin, 1983; Chatterjee, 1986; Weidenbaum and Vogt, 1987; Seth, 1990; Indanon, 2007). Dimson and Marsh (1986) considered relative sizes are the key factor to analyze long-term M&A performances.

According to the domestic M&A cases, the acquirers were usually larger than target firm. And, M&A is relatively either easier to succeed, or otherwise, easier to fail. (Bruton, Oviatt, and White, 1994; Clark and Ofek, 1994) The reasons for acquirers to not want to merge larger target firm might be: 1. For larger target firms, they usually own complex organizational structures, so the resources hardly are integrated together, the acquirers need to spend more time and cost to manage the target company. 2. The potential management problems increase the return variability. 3. It is harder for start-up companies to pay huge M&A costs. (Ravenscraft and Scherer, 1989; Clark and Ofek, 1994; Fuller, Netter, and Stegemoller, 2002; Alexandridis, Fuller, Terhaar, and Travlos, 2013)。

Scholars generally considered the relative size is one of the major factors that affect M&A performance, but they did not commonly conclude that M&A must bring a better M&A performance. Some scholars supported that, a smaller target firms can achieve better M&A performance. Kusewitt(1985), Fuller, Netter, and Stagemoller(2002), Filipovic(2012) all believed that smaller target firm is better at

operating performance, Kusewitt and Filipovic used ratio to present the relative size, the smaller the ratio, the better the performance of target firm will have. Homberg, Rost, and Osterloh(2009) considered the larger acquirer can produce financial synergy; Beatty(1994) pointed out, smaller target firm can make the operation successful. Alexandridis, Fuller, Terhaar, and Travlos(2013) believed that as long as the target firm is small, the acquirer will definitely have good return. However, the smaller acquirer would produce the small return. No matter a short-term or long-term it is for, the larger the target firm is, the smaller the return for acquirer will be. Hence, merging larger target firm sometimes hurts shareholders. The domestic scholars Chang and Yung (2000) advocated that larger acquiring firms can reduce cost for integration on target firms.

Moeller, Schlingemann, and Stulz (2004)、Moeller, Schlingemann, and Stulz (2005)、Gorton(2009) held an opposite opinion, they considered larger acquirers are usually overconfident and tend to process merging with overpayment. The empirical results supporting the relationship of relative size and financial return are negatively correlated. It means that the larger scale of acquirer is, the smaller the return comes, and it also hurt the stockholders. Demsetz and Lehn(1985) believed that managers in smaller acquirers have less benefit than those who are serving in larger acquirers; Indanon(2007) advocated that, relative sizes only affect the M&A performance of target firms. The larger the target firm is, the better M&A performance will appear. Asquith, Bruner and

Mullins(1983) pointed out, the larger the target firm is, the larger the excess return of acquiring firm will show up.

As for the rest of scholars, such as Harrison(1991), Kitching(1967), they considered relative sizes should remain relatively on each different modest ratio to increase the M&A performance. Whenever a relative size ratio (target firm to acquirer) is too big or too small, both hurt the M&A performance. When the target firm is too small, there will have problems caused: 1.The acquirer might lose their interest to merge it. 2. The resources of target firm didn't meet the acquirer's needs. Conversely, when the target firm is too large, they will be: 1.It increases the transaction cost 2.If the M&A is a wrong decision, the acquirer will be subject to a greater impact. If both organizations could not merge perfectly, or merge together overlong, it could hurt the M&A performance too.

In terms of selection of the size variable, Asquith, Bruner, and Mullins(1983)、Jarrel(1983) used the shareholder's equity as reference; Lee and Caves(1998)、Seth(2002) were used sales; Lubatkin(1983)、Kusewitt(1985)、Schmidt and Fowler(1989)、Kedia, Ravid and Pons(2008) were used the book value of assets; Kedia, Ravid and Pons (2008) were based on the market value of assets. This paper considers about the convenience of relevant information, and only took into concerns about whether they are the relative size or not, so we adopt the capital or paid-in capital from

TEJ as a standard for relative size.

In summary, this paper summarizes and deduces the following hypotheses:

Hypothesis1. *Acquirer wants to increase market concentration and economy of scale, so it makes horizontal M&A. But if acquirer's size is smaller than target firm, it needs to manage complex organizational structure. This situation would be offset by an increase in the market concentration, and harm the M&A performance.*

Hypothesis2.*While the Industrial relevance is lower, the M&A performance will be worse. So the conglomerate M&A case with huge difference of relative size, the M&A performance is underperformed.*

Chapter 3 Research Design and Methods

3.1 Independent Variables

This paper applies the TEJ M&A database, Market Observation Post System (M.O.P.S) and Google to collect M&A information. In all M&A cases, the acquirers were in the exchange list or just OTC companies. However, the target firms were not limited. I choose some variables from the references to finish a statistic analysis including RS(Relative Size), TYPE(M&A Type), AC(Affiliated Companies),

OOA(Outcome of Acquisition), FOP(Form of Payment), CBMA(Cross-Border M&A), AOA(Attitude of Acquiring), PPT(Public or Private Target). To measure the M&A performance, I use the variables from Sales Growth Rate(SGR), Net Income before Tax (NIT), Net Income before Tax to Sales (NITS), Total Asset Turnover Rate (TATR), Return of Asset (ROA), Return of Equity(ROE), and Annual Rate of Return (ARR).

3.1.1 Independent Variables

1. Relative Size (RS):

   Measured by paid-up capital, if the paid-up capital of the acquiring was larger than the target firm, the dummy variable should be 1; otherwise 0. These data are collected by the TEJ database and the public information on Google.

2. M&A Type(TYPE):

   This paper classifies M&A types into vertical (TYPE=1), horizontal (TYPE=2) and cross industry M&A (TYPE=3). These data are also from the TEJ M&A database.

3. Affiliated Companies (AC):

   This paper also use the TEJ M&A database to judge whether both firms were affiliated companies or not (Yes=1, No=0). When the acquirer and the target firm scope with some conditions, the M&A cases are considered as affiliated companies.

4. Outcome of Acquisition (OOA):

This paper uses the record date of the acquisition as criterion. If the acquiring firm actually merge the target firm on the record date, the dummy variable is 1; otherwise is 0.

5. Form of Payment (FOP):

This paper uses the information from a date of declaration to judge the different terms of payment. The terms of payment can be classified into cash (FOP=1), stock exchange (FOP=2), cash combined with stock exchange (FOP=3), and pure acquisition (FOP=4, suitable for 100% of total outstanding shares of the company).

6. Cross-Border M&A (CBMA):

Some paper mentioned the cross-border M&A was also an important variable for M&A, therefore I combine it into the model.

7. Attitude of Acquiring (AOA):

The attitude of acquiring is an important variable. The dummy variable is 1 when the attitude is hostile; otherwise is 0.

8. Public or Private Target (PPT):

The dummy variable is 1 when the target firm is exchange listed or OTC company; otherwise 0.

3.1.2 Dependent Variables

1. Sales Growth Rate (SGR):

   It is measured by yearly sales growth rate. This paper use the M&A year as a basic background, and compared the revenue of one, two, three, and four year later to the M&A year.

2. Net Income before Tax (NIT):

   It is measured by yearly NIT growth rate. This paper uses the M&A year as the basement, and compared the NIT of one, two, three, and four year later to the M&A year.

3. Net Income before Tax to Sales (NITS):

   It is measured by yearly NITS growth rate. This paper uses the M&A year as the basement, and compared the NITS of one, two, three, and four year later to the M&A year.

4. Total Asset Turnover Rate (TATR):

   It is measured by yearly TATR growth rate. This paper uses the M&A year as the basement, and compares the TATR of one, two, three, and four year later to the M&A year.

5. Return of Asset (ROA):

   It is measured by yearly ROA growth rate. This paper uses the M&A year as

the basement, and compared the ROA of one, two, three, and four year later to the M&A year.

6. Return of Equity (ROE):

It is measured by yearly ROE growth rate. This paper uses the M&A year as the basement, and compares the ROE of one, two, three, and four year later to the M&A year.

7. Annual Rate of Return (ARR):

This paper uses the rate of return to measure the financial performance. I classify the financial performance into one year, two, three year, and four year. All the financial performances were started from the acquisition announcements.

Table 3-1: The Industry Classification of Samples

Industries	Acquire	Target Firm
Cement Industry	4	2
Food Industry	11	6
Plastic Industry	8	6
Textile & Fiber Industry	11	8
Electric Machinery Industry	29	30
Electrical & Cable Industry	9	1
Chemical & Biotech Industry	42	32
Biological Science & Technology	1	1
Chemical Industry	7	0
Biotechnology Industry	19	6
Glass & Ceramic Industry	1	1
Paper & Pulp Industry	1	1
Iron & Steel Industry	18	11
Rubber Industry	2	0

Automobile Industry	9	8
Electronic Industry	316	368
Communication Network Industry	3	2
Software Industry	2	1
Semiconductor Industry	41	11
Computers & Peripherals Industry	31	4
Opto-Electronic industry	33	19
Telecommunication Network Industry	17	6
Electronic Components Industry	30	5
OEM Components Industries	14	5
IT Services industry	7	2
Other Electronic Industry	12	2
Building Materials & Construction Industry	20	19
Shipping and Transportation Industry	11	9
Tourism Industry	6	7
Financial Industry	54	46
Financial Holding Industry	6	1
Investment & Trust Industry	0	2
Insurance Industry	2	7
Trading and Consumers' Goods Industry	13	10
Security Industry	22	27
Investment Trust Industry	0	67
Cultural and Creative Industry	3	0
Investment Industry	0	11
Other Industry	57	128
Total	**872**	**872**

Reference: TEJ

3.2 Statistical Method

According to the topic of this paper, I choose the one-way ANOVA and regression analysis process to verify these hypotheses.

3.2.1 One-Way ANOVA

I classify the samples into six groups and measured the M&A performance of these six groups and use one-way ANOVA to analyze:

Table 3-2: Six Groups

	Small Relative Size		Large Relative Size	
Vertical M&A	Group1	7	Group2	88
Horizontal M&A	Group3	64	Group4	532
Cross-Industry M&A	Group5	20	Group6	133

3.2.2 Regression Analysis

In the regression analysis, I use eight independent variables and seven dependent variables to test that how these independent variables impact on the dependent variables. And I also want to test the stock rate of return between the announcement date and the record date.

$$SGR_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

$$NIT_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

$$NITS_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

$$TATR_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

$$ROA_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

$$ROE_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

$$ARR_t = \alpha_1 + \alpha_2\, RS + \alpha_3\, TYPE + \alpha_4\, AC + \alpha_5\, OOA + \alpha_6\, FOP + \alpha_7\, CBMA + \alpha_8\, AOA + \alpha_9\, PPT \quad t = 1,2,3,4$$

Chapter 4 Research Results

4.1 Hypotheses Results

4.1.1 Hypothesis 1

In this paragraph, I use the one-way ANOVA to test the hypotheses and stock rate of return as the dependent variable. I classify all the M&A cases into six groups, and test the M&A performance in t=0, 1, 2, 3, 4, using the ANONA analysis. First of all, I check the homogeneity of variance by Levene's test, and all the time period is not significant. Next, I use one-way ANOVA, finding all the time periods are significant. Finally, I use the Fisher' LSD to do the post hoc tests.

Table 4-1: ANOVA Results (Hypothesis 1)

ANOVA	t=0	t=1	t=2	t=3	t=4
Levene	0.8	0.108	0.186	0.563	0.295
Level of Significance	0.852	**0.026****	**0.011****	**0.048****	**0.014****

Because t=0 is not significant, I don't do the post hoc test. The test results of the other four time periods were in table 4-2 to 4-5. No matter they were in the short or long time periods, the performance of the "cross-industry & larger relative size" models were better than the "vertical M&A & larger relative size" model. In t=4, the performance of "horizontal M&A & smaller relative size" model was better than the "cross-industry &

larger relative size".

Table 4-2: Post Hoc Test Results (t=1)

LSD(t=1)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	-0.14824	0.601
	Group 3	-0.19264	0.509
	Group 4	-0.07653	0.781
	Group 5	-0.13825	0.720
	Group 6	-0.33061	0.238
Group 2	Group 3	-0.04440	0.729
	Group 4	0.07172	0.388
	Group 5	0.01000	0.972
	Group 6	-0.18237	**0.068***
Group 3	Group 4	0.11612	0.284
	Group 5	0.05440	0.852
	Group 6	-0.13797	0.257
Group 4	Group 5	-0.06172	0.822
	Group 6	-0.25408	**0.001****
Group 5	Group 6	-0.19237	0.493

Table 4-3: Post Hoc Test Results (t=2)

LSD(t=2)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	0.38090	0.372
	Group 3	0.58052	0.183
	Group 4	0.32268	0.430
	Group 5	0.47253	0.432
	Group 6	-0.04173	0.921
Group 2	Group 3	0.19962	0.337
	Group 4	-0.05822	0.682
	Group 5	0.09164	0.843
	Group 6	-0.42263	**0.012****
Group 3	Group 4	-0.25784	0.129
	Group 5	-0.10798	0.819
	Group 6	-0.62225	**0.001****

Group 4	Group 5	0.14986	0.738
	Group 6	-0.36441	**0.002*** **
Group 5	Group 6	-0.51426	0.260

Table 4-4: Post Hoc Test Results (t=3)

LSD(t=3)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	-.29565	.594
	Group 3	-.05509	.922
	Group 4	-.36057	.501
	Group 5	-.08058	.930
	Group 6	-.69572	.202
Group 2	Group 3	.24056	.324
	Group 4	-.06492	.697
	Group 5	.21507	.779
	Group 6	-.40007	**.040****
Group 3	Group 4	-.30548	.123
	Group 5	-.02549	.974
	Group 6	-.64063*	.004
Group 4	Group 5	.28000	.711
	Group 6	-.33515	**.012****
Group 5	Group 6	-.61514	.419

Table 4-5: Post Hoc Test Results (t=4)

LSD(t=4)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	.01271	.988
	Group 3	.06280	.940
	Group 4	-.07577	.924
	Group 5	.30177	.810
	Group 6	-.70954	.381
Group 2	Group 3	.05009	.881
	Group 4	-.08848	.721
	Group 5	.28906	.772

	Group 6	-.72225	**.011****
Group 3	Group 4	-.13857	.590
	Group 5	.23897	.811
	Group 6	-.77235	**.008*****
Group 4	Group 5	.37754	.699
	Group 6	-.63378	**.001*****
Group 5	Group 6	-1.01131	.304

4.1.2 Hypothesis 2

In this paragraph, I also choose the one-way ANOVA and stock rate of return to test the hypothesis. I classify samples into four groups (highly relevant & larger size; highly relevant& smaller size; low relevance& larger size; low relevance& smaller size). The results show that t=1, 2, 3, 4 were obviously significant,

In t=1, the performance of "highly relevant& larger size" was smaller than "low relevance& larger size", and in the long time period, the performance of "highly relevant & larger size" and "highly relevant& smaller size" were both worse than "low relevance& larger size".

Table 4-6: ANOVA Results (Hypothesis 2)

ANOVA	t=0	t=1	t=2	t=3	t=4
Levene	0.704	0.196	0.135	0.526	0.168
Significant	0.771	**0.033****	**0.005*****	**0.043****	**0.005*****

Table 4-7: Post Hoc Test Results (t=1)

LSD(t=1)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	-.07905	.425

	Group 3	-.20411	**.003*** **
	Group 4	-.06446	.794
Group 2	Group 3	-.12506	.271
	Group 4	.01459	.956
Group 3	Group 4	.13965	.581

Table 4-8: Post Hoc Test Results (t=2)

LSD(t=2)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	.17034	.280
	Group 3	-.37275	**.001*** **
	Group 4	.14152	.751
Group 2	Group 3	-.54308	**.003*** **
	Group 4	-.02882	.951
Group 3	Group 4	.51426	.260

Table 4-9: Post Hoc Test Results (t=3)

LSD(t=3)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	.15560	.409
	Group 3	-.34399	**.010*** **
	Group 4	.27115	.726
Group 2	Group 3	-.49960	**.021** **
	Group 4	.11555	.884
Group 3	Group 4	.61514	.430

Table 4-10: Post Hoc Test Results (t=4)

LSD(t=4)			
I	J	Average Difference(I-J)	Significant
Group 1	Group 2	-.04760	.848
	Group 3	-.64435	**.000*** **
	Group 4	.36697	.712
Group 2	Group 3	-.59675	**.037** **
	Group 4	.41456	.684

Group 3	Group 4	1.01131	.314

4.2 Annual Rate of Return

I focus on the Annual Rate of Return, and use the One-Way ANOVA analysis to test the M&A performance through different M&A types and the relative size. According to the results, the M&A performance between the announcement date and the record date isn't significant, but the one year to four year is significant. These results explain the M&A performance is affected by the M&A types and the relative size.

Next, I focus on the Annual Rate of Return, and use the regression analysis to test whether all the independent variables affect the M&A performance. In the situation of$\alpha = 0.05$, only the two years are significant, but the one year and four year are significant only in the situation of$\alpha = 0.1$.

I also classify the M&A type into two groups, one is vertical and horizontal M&A, and the other one is cross-industry M&A. The results of one, two, four year are significant, but the one of three year is still not significant.

All of the significant results are pointed out that the industrial relevance is the key variable. The lower industrial relevance is, the higher annual rate of return comes.

According to hypothesis 2, I test the horizontal M&A and the relative size, but the M&A performance of all years are not significant.

Table 4-11: Regression Results (Annual Rate of Return)

	t=0		t=1		t=2	
Annual Rate of Return	Coefficient	Level of Significance	Coefficient	Level of Significance	Coefficient	Level of Significance
Total	--	0.745	--	**0.064***	--	**0.033****
RS	0	0.998	-0.016	0.953	0.183	0.271
TYPE	0.007	0.881	0.407	**0.003*****	0.205	**0.022****
AC	0.084	0.116	0.346	**0.04****	0.151	0.159
OOA	0.072	0.74	-0.032	0.963	-0.106	0.825
FOP	-0.005	0.845	-0.175	**0.024****	0.036	0.477
CBMA	-0.125	0.265	0.08	0.786	-0.002	0.991
AOA	NA	NA	-0.511	0.781	-0.84	0.43
PPT	0.058	0.286	-0.112	0.516	-0.037	0.732
	t=3		t=4			
Annual Rate of Return	Coefficient	Level of Significance	Coefficient	Level of Significance		
Total	--	0.193	--	**0.057****		
RS	0.146	0449	-0.019	0.941		
TYPE	0.12	0.238	0.229	0.12		
AC	0.174	0.148	0.266	0.109		
OOA	0.467	0.465	0.108	0.914		
FOP	0.03	0.618	0.119	0.173		
CBMA	0.213	0.444	0.161	0.673		
AOA	-0.773	0.484	-0.55	0.7		
PPT	-0.028	0.816	0.079	0.641		

4.3 Financial Dependent Variables

In all of the financial dependent variables (*SGR NIT, NITS, TATR, ROA, ROE*), *SGR* is the most significant variable. In the ANOVA analysis, the one, two, three and four year M&A performances are significant when $\alpha = 0.1$. And the relative size can

affect the revenue growth rate, the larger acquirer creates worse M&A performance; the smaller acquirer creates better M&A performance. The short term model is more significant than the long term model.

The two year M&A performance is more significant than one year M&A performance. The *M&A type*, the *RS*, and the *PPT* are significant to the *SGR*.

The longer the time period is, the better the *SGR* shows up. The performance of two, three, four year are significant at$\alpha = 0.1$.

Table 4-12: Regression Results (*SGR*)

	t=1		t=2	
SGR	Coefficient	Level of Significance	Coefficient	Level of Significance
Total	--	0.084*	--	0.04**
TYPE	1.852	0.111	3.086	0.06*
RS	-4.315	0.021**	-5.469	0.033**
AC	1.911	0.162	1.621	0.384
OOA	-0.82	0.908	-0.339	0.973
PPT	1.557	0.261	3.419	0.071*
AOA	-1.668	0.915	-4.548	0.822
FOP	-0.992	0.136	-1.410	0.137
CBMA	0.407	0.879	0.859	0.847
	t=3		t=4	
SGR	Coefficient	Level of Significance	Coefficient	Level of Significance
Total	--	0.059*	--	0.048**
TYPE	4.887	0.06*	6.619	0.05**
RS	-7,569	0.051*	-9.588	0.055*
AC	2.028	0.481	3.274	0.387
OOA	-1.73	0.934	-4.822	0.895
PPT	4.846	0.099*	6.683	0.085*
AOA	-6.322	0.83	-8.866	0.808

FOP	-2.428	0.111	-3.331	0.103
CBMA	1.911	0.779	2.925	0.756

Chapter 5 Conclusion

It has been extensively discussed on M&A performance, but most of these papers focused on the foreign M&A cases and specific industry. Besides, all M&A databases in Taiwan are imperfect, and M&A cases in SDC was started from 1991, TEJ. Most of domestic papers used SDC M&A database to filter proper samples to research M&A cases in Taiwan, but the sample sizes were usually less than 100. The research method was limited to multiple regressions, factor analysis, matching method and so on.

Owed by the launch of TEJ M&A database in 2014, I increase the sample sizes and classify these data into six groups, trying to find the relationship between all of them. This new database solves the small sample size problem. I filter 872 M&A cases and use one-way ANOVA and regression to test the two hypotheses which are mentioned in Chapter 2.

According to the table 4-1 to 4-12, the results suggest that the lower industrial relationship can create better M&A performance than the higher industrial relationship. Also, the regression model shows a striking effect of the seven independent variables on performance in the stock annual rate of return and the revenue growth rate, especially in the long term period.

In the regression model, contrast to the vertical and horizontal M&A, the cross industry M&A can create better short term stock rate of return. But the long term stock rate of return of cross industry M&A is not significantly better than the other two M&A types. Besides, the bigger the acquirer size, the worse the revenue growth rate and vice versa.

The one-way ANOVA results indicate that there exists significant difference in the six groups (H1) and the four groups (H2), especially in t=1, 2, 3, 4, performance of cross industry indeed better than the other two M&A types.

Reference

1. Ahern, K.R. and Harford, J., 2014, "The Importance of Industry Links in Merger Waves," The Journal of Finance, 69, 527-576.
2. Ahern, K.R., 2012, "Bargaining power and industry dependence in mergers," Journal of Financial Economics, 530-550.
3. Amit, R and Livnat, J, 1988, "Diversification and the Risk-return Trade-off," Academy of Management Journal.
4. Beard, T. R., D. L. Kaserman and J. W. Mayo, 2001,"Regulation Vertical Integration and Sabotage," Journal of lndustrial Economics,Vol.49, No.3, 319-333.
5. Beattie, D.L., 1980, "Conglomerate Diversification and Performance: A Survey and Time Series Analysis," Applied Economics, 12, pp.251-273.

6. Birkinshaw, J., and Nobel, R., “Innovation in Multinational Corporations: Control and Communication Patterns in International R&D Operations,” Strategic Management, Journal 19(5), 479-496.
7. Bradley, M., Desai, A., and Kim, E. H., 1988, “Synergistic Gains from Corporate Acquisitions and their Division between the Stockholders of Target and Acquiring Firms,” Journal of Financial Economic.
8. Brigham, E. F., 1986, “Cases in Managerial Finance,” Dryden Press, Chicago.
9. Cassiman, B., Colombo, M. G., Garrone, P., and Veugeler, R.,2005, “The Impact of M&A on R&D Process: An Empirical Analysis of the Role of Technological- and Market- Relatedness,” Research Policy, Vol. 34, No.2, pp. 195-220.
10. Chang, Y.L., 2013a, “The Relationship between Acquisition Behavior and Operating Performance in Short and Middle-Long Run,” National Taiwan University Master Thesis.
11. Chang, Y.Y., 2013b, “The Success or Failure of M&A: Evidence from TWSE-Listed Companies,” National Chung Cheng University Master Thesis.
12. Chatterjee, S., 1986, “Types of Synergy and Economic Value: The Impact of Acquisition on Merging and Rival Firms,” Strategic Management Journal, 7, 119-131.
13. Cook, T. E., 1986, “Merger and Acquisition,” Oxford: Basil Blackwell.
14. Cooke, T. E., 1986, “Voluntary Disclosure by Swedish Companies,” Journal of International Financial Management and Accounting, 1(2), pp1-25.
15. Das, T. K., and Teng. B., 2000, “A Resource-based Theory of Strrategic Alliances,” Journal of Management.
16. Eckbo, B. Espen, Ronald M. Giammarino and Robert L. Heinkel 1990, “Asymmetric information and the medium of exchange in takeovers: Theory and

evidence," Review of Financial Studies 3, 651–675.

17. Elgers & John J.Clark, 1980, "Merger Types and Shareholders Returns: Additional Evidence," Financial Management Summer,p.66-72.
18. Fan, J. and Goyal, V., 2006, "On the Patterns and Wealth Effects of Vertical Mergers," The Journal of Business, Vol. 79, No, 2, 877-902.
19. Fee, C.E. and Thomas. S., 2004, "Sources of gains in horizontal mergers: evidence from customer, supplier, and rival firms," Journal of Financial Economics, 74, 423-460.
20. Fowler, K. L. and D. R. Schmidt., 1989, "Determinants of tender offer post-acquisition financial performance," Strategic Management Journal, 10, pp. 339-350.
21. Foster, T. A. and Muller, E. J., 1990, "Third Parties: Your Passort to Profits," Distribution, Vol. 89 No. 10, pp.31-32.
22. Gaughan, P. A., 1991, "Mergers and Acquisitions," HarperCollins.
23. Ghosh, A., 2001, "Does Operating Performance Really Improve Following Corporate Acquisitions?" Journal of Corporate Finance.
24. Hagedoorn, J., and Duysters, G., 2002, "The Effect of Mergers and Acquisitions on the Technological Performance of Companies in a High-tech Environment,"Technology Analysis & Strategy Management, Vol. 14, No. 1, 2002.
25. Harris, R. S., and Ravenscraft, D., 1991, "The Role of Acquisitions in Foreign Direct Investment: Evidence from the U.S. Stock Market," The Journal of Finance.
26. Healy, P. M., Palepu, K., and Ruback, R. S., 1992, "Does corporate performance improve after mergers?" Journal of Financial Economic.
27. Hill, J. W., and Jones, G., 1995, "Strategic management theory: An integrated Approach," 3rd ed. Boston: Houghton-Mifflin.

28. Hitt, M., Harrison, J., Ireland, R. D., and Best, A., 1998, “Attributes of Successful and Unsuccessful Acquisitions of US Firms,” British Journal of Management.
29. Huang, B.R., 2011, “The Performance of Cross-Border M&A: An Empirical Study of Listed Companies in Taiwan,” National Taiwan University Master Thesis.
30. Kedia, S., Ravid, S. A., and Pons, V., 2009, “Vertical Mergers and the Market Valuation of the Benefits of Vertical Integration,” Working Papers Series.
31. Kiessling. T., and R. G. Richey, 2005, “The Valuation of International Acquisitions from a Network Perspective and Market Based Competencies,” Journal of Business Strategies. 22(1): 1-20.
32. Kim,E.H.and J.J. McConnell., 1977, “Corporate Merger and the Co-Insurance of Corporate Debt?” The Journal of Finance, 32, p.349-365.
33. Kitching, J., 1967, “Why do mergers miscarry?” Harvard Business Review, 45(6), 84-101.
34. Kusewitt, J. B., “An Exploratory Study of Strategic Acquisition Factors Relating to Performance,” Strategic Management Journal, 6 (2), 1985, 151-169
35. LaFontaine, F. and M. Slade, 2007, “Vertical Integration and Firm Boundaries: the Evidence,” Journal of Economic Literature, Volume 135, 629-685.
36. Lewellen, W.G.,1971, A Pour Financial Rationale for the Conglomerate Merger,Journal of Finance,563-574.
37. Linn, Scott C. & Switzer, Jeannette A., 2001, “Are cash acquisitions associated with better postcombination operating performance than stock acquisitions?” Journal of Banking & Finance, Elsevier, Elsevier, vol. 25(6), pages 1113-1138, June.
38. Malatesta, P., 1983, “The wealth effect of merger activity and the objective functions of merging firms,” Journal of financial economics 11, 155-181.

39. Markides, C.C., and C.D. Itter, 1994, "Shareholder Benefits from Corporate International Diversification: Evidence from U.S. International Acquisitions," Journal of International Business Studies, 25, 343-360.
40. Mueller, D.C., 1985, 'Mergers and Market Share', Review of Economics and Statistics, 67, 259-67.
41. Noori, H., 1990, "Managing the Dynamics of New Technology," Pentice-Hall, Englewood Cliffs, p143-157.
42. Opler, T. C., 1990, "Studies on Leveraged Buyout Finance and Corporate Mergers," Dissertation, University of California, Los Angeles.
43. Perry, M.K., 1989, "Chapter 4 Vertical integration: Determinants and effects," Handbook of Industrial Organization, Volume 1, 183-255.
44. Porter, M., 1980, Competitive Strategy, New York: The Free Press.
45. Ramanujam, V., and Venkatraman, N., 1986, "Measurement of Business Performance in Strategy Research: a Comparison of Approaches," Academy of Management Review, 11:801--814.
46. Scherer, F. M., 1980, Industrial Market Structure and Economic Performance, Houghton Mifflin.
47. Seth, 1990, "Value creation in acquisitions：A Reexamination of performance issues," Strategic Management Journal, Vol.11.
48. Stillman, Robert., 1983, "Examining Antitrust Policy Towards Horizontal Mergers," Journal of Financial Economics, 11, pp.225-240,
49. Tseng, J.J., 2010, "Scope Expansion, Geographic Expansion and Innovation Performance: An Empirical Study of High-Tech M&A," Journal of Management and Systems, Vol.17, No. 3.
50. Trautweun, F., 1990, "Merger Motives and Merger Prescriptions", Strategic

Management Journal, vol.11, iss.1, p.283-295.

51. Teece, D. J., 1980, Towards an Economic Theory of the Multiproduct Firm, University of California, Berkeley.
52. Weston and Chung, 1983, “Do Mergers Make Money? A Research Summary, Mergers and Acquisitions.”
53. Wernerfelt. B., 1984, “A Resource-based View of the Firm,” Graduate School of Business Administration, The University of Michigan.
54. Weston, Mitchell, and Mulherin, 2004, Takeovers, Restructuring, and Corporate Governance, Pearson Prentice Hall.
55. Woo, C. Y., and Willard, G., 1983, “Performance Representation in Business Research: Discussion and Recommendation,” Annual National Meetings of the Academy of Management, Vol.8, No.1, pp.253-276.
56. Chung, Y. C., 2005, Micro Economics, Best-Wise Publishing Co., Ltd.
57. Huang, C. F., 2000, A Study on Core Supply Base in the General Contractor’s Subcontracting Strategy, National Central University Doctoral Thesis.
58. Chung, F. C., 2000, Case Study on Mergers and Acquisitions, National Taiwan University Master Thesis.
59. Kuo, C. L., 2008, Economic Research, Vol. 8.
60. Shu, Y. L., 2002, “The Diversification Change of Taiwan Business Group,” National Cheng Kung University Master Thesis.
61. Asquith, P., Bruner, R. F., and Mullins, D. W., 1983, “The Gains to Bidding Firms from Merger,” Journal of Financial Economics.