國立交通大學

科技管理研究所

碩 士 論 文

企業相對規模對併購後表現影響之研究

Post-Merger Performance: Does Size Matter?

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摘　　要

合併與收購是近二十年來相當熱門的企業活動，但實證研究上對於併購後的表現仍具爭議，故許多學者嘗試從不同角度解釋影響併購後表現的原因。本論文從企業的相對規模著眼，並分為短期與長期，研究企業之間相對規模對於併購後表現的影響。本研究結合SDC與COMPUSATA資料庫，蒐集美國地區2000年到2001年曾經從事併購活動的上市科技公司進行分析，並使用股票報酬與營運績效兩項指標來衡量併購後的表現。短期方面運用事件研究法的分析果顯示，與併購前相比，併購後不論是股票報酬或營運績效都較差。回歸分析則顯示：主併公司的絕對規模與併購後表現成正比；兩公司的規模越相近，併購後表現越好。長期方面運用事件研究法的分析結果顯示，與併購前相比，併購後不論是股票報酬或營運績效都較差。此外觀察出當兩公司的相對規模越相近，長期的股票報酬較差，而營運績效較好。整體而言，企業相對規模對於併購後表現確實造成不同影響。

關鍵字：合併與收購；併購後表現；企業相對規模

Post-Merger Performance: Does Size Matter?

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ABSTRACT

Mergers and acquisitions have been one of the most pronounced activities at the global level in the past two decades, but the overall empirical post-merger performance is still controversial. Researchers have been trying to explain various performances from different viewpoints. In this dissertation, the investigation aimed to analyze the performance in post-merger integration stages from the viewpoints of relative size of combining firms, discussing how various relative sizes between combining firms influence post-merger performance in the short-term and long-term.

The data of this dissertation was collected from SDC platinum and COMPUSTAT, where the data were M&A deals of high-tech public companies announced between 2000 and 2001 in the U.S.A. The post-merger performance was assessed by using share returns as market performance and ROA and ROE as operating performance.

As for short-term analysis, the event study analysis showed post-merger performance under both market assessments and operating performance assessments were significantly negative. The regression analysis results showed that percentage change in stock returns was significantly positively associated to the target sizes comparing to acquirers in M&A deals.

Similarly, the event study analysis for the long-term showed that post-merger performance under both market assessments and operating performance assessments were significantly negative. Moreover, it could be observed that as the size of the target companies comparing to the acquirers become larger, the shareholders earned less comparing to which before mergers, but the operating performance become relatively better. Overall, it can be concluded that relative size between combining firms do result in different post-merger performance.

Keywords: Mergers and Acquisitions, Post-Merger Performance, Relative Size

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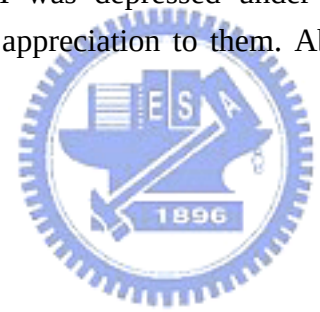

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1. INTRODUCTION

Chapter 1 provides an introduction and overview of this dissertation. Firstly in this chapter, the background of the research is introduced. Following this is the central question, the aim, and the objectives of the dissertation. Finally, the scope and the structure of the dissertation are presented.

1.1 Background

Mergers and acquisitions (M&A) refer to two companies combined into one to achieve certain strategic and business objectives (Sudarsanam 2003). This activity aims to create value for the stakeholders who are connected to the companies such as shareholder and employees. According to Sudarsanam (2003), firms generally enter into M&A for different sorts of reasons, reasons which involve aspects that are economic, strategic, financial, managerial, and organizational. By considering the aspects above, companies are able to set proper plans and to conduct due diligence in advance, and thereby to realize all their plans carefully, and to achieve their corporate strategic goals.

M&A is certainly not an end but a start. When a firm effectively underwent M&A, simultaneously, a new challenge for the combined company, to integrate two different entities, had just started. Post-M&A integration is an important essential for further successfully achieving those objectives set before M&A deals; if a combined firm cannot integrate well, it might not achieve those objectives because the new team does not work smoothly. The results differ from firm to firm due to the different integration conditions. When M&A proceeds successfully and the set goals are realized, a higher value can be created for the stakeholders. On the contrary, when M&A does not go

well and fails to create any value, the M&A could prove to be a disaster for the companies' stakeholders. In fact, the empirical evidence studies show both positive and negative post-M&A performance (largely negative) for the merged companies in the long-run. Therefore, an M&A initiative cannot be assured of a definite successful result.

Because the overall empirical post-M&A performance is still controversial, researchers have been trying to explain various performance from different viewpoints, such as different type of M&A (horizontal, vertical, or conglomerate), different medians of M&A (cash or stock swap), different market-to-book value of acquiring companies, and whether the business of combined companies are more focused or diversifies comparing to pre-M&A stages, etc. In this dissertation, the investigation is going to analyze the performance in post-M&A integration stages from the viewpoints of relative size of combining firms, discussing how various relative sizes between combining firms influence post-M&A performance. The analysis will start from investigating the effect in the short-term and then extend to which in the long-term.

1.2 Central Question

To investigate the relative size of combing firms and connect it to combined firms' performance in post-M&A integration phases, the central question asked in this dissertation is:

How does relative firm size between target and acquiring companies influence post-merger performance?

1.3 Aims

Having described the background and developed the central question, two main purposes of this dissertation are as below:

1. The dissertation aims to analyze the overall short-term performance within the first quarter after M&A and investigate how relative size of the combining firms influences post-M&A performance in the short-term.

2. The dissertation aims to analyze the overall long-term post-M&A performance and investigate how relative size of the combining firms influences the long-term performance.

Overall, the dissertation aim to discuss the various post-M&A performance from the viewpoints of relative size of combing firms by seeing whether it is a factor for post-M&A performance, and how it influences post-M&A performance in the short-run and long-run.

1.4 Objectives

To achieve the primary aim of the thesis above, five main objectives of the dissertations are divided into short-term and long-term analyses:

Short-term:

1. To analyze the overall post-M&A performance in the short-term by conducting an event study analysis.

2. To classify different relative sizes into various groups and compare if there is any

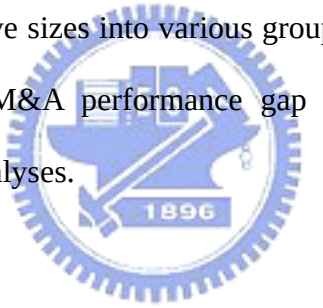
different long-term post-M&A performance gap between different groups by conducting event study analyses.

3. To figure out if there is any relationship between relative size of combing firms and the post-M&A performance in the short-run by conducting a regression analysis.

Long-term:

4. To analyze the overall post-M&A performance in the long-term by conducting event study analyses.

5. To classify different relative sizes into various groups and compare if there is any different long-term post-M&A performance gap between different groups by conducting event study analyses.



1.5 Scope

The scope of the dissertation is defined by two dimensions:

1. In the geographical aspect, due to availability and completeness of the data, the investigation will focus on firms which had undergone M&A activities in the U.S.A.

2. In the time aspect, in order to observe both the short-term and the long-term performance of the combined firms, the investigation will concentrate in the M&A deals announced between 2000 and 2001, so that the long-run post-M&A performance can be tracked for as long as five years.

1.6 Dissertation Structure

The dissertation begins with the introduction of Chapter 1.

Chapter 2 will present an overall literature review, which introduces the general concepts and rationales of M&A. The critical post-M&A integration issues and the assessments of measuring post-merger performance will also be generalized.

Chapter 3 will introduce the main issue of the dissertation: the impact of relative size. The arguments and the hypotheses of this dissertation will be presented in this chapter.

Chapter 4 will introduce the research method of the dissertation; the investigating methodology of 'regression analysis' and 'event study' will be discussed in this chapter. The data sources would also be introduced in this chapter.

In chapter 5, the short-term and long-term post-M&A performance assessed by market and operating performance of the data firms will be analyzed through regression analysis and event studies.

Chapter 6 will discuss the overall research results.

Chapter 7 will present the conclusions and recommendations of the dissertation. The dissertation structure is shown in the figure 1.1 below.

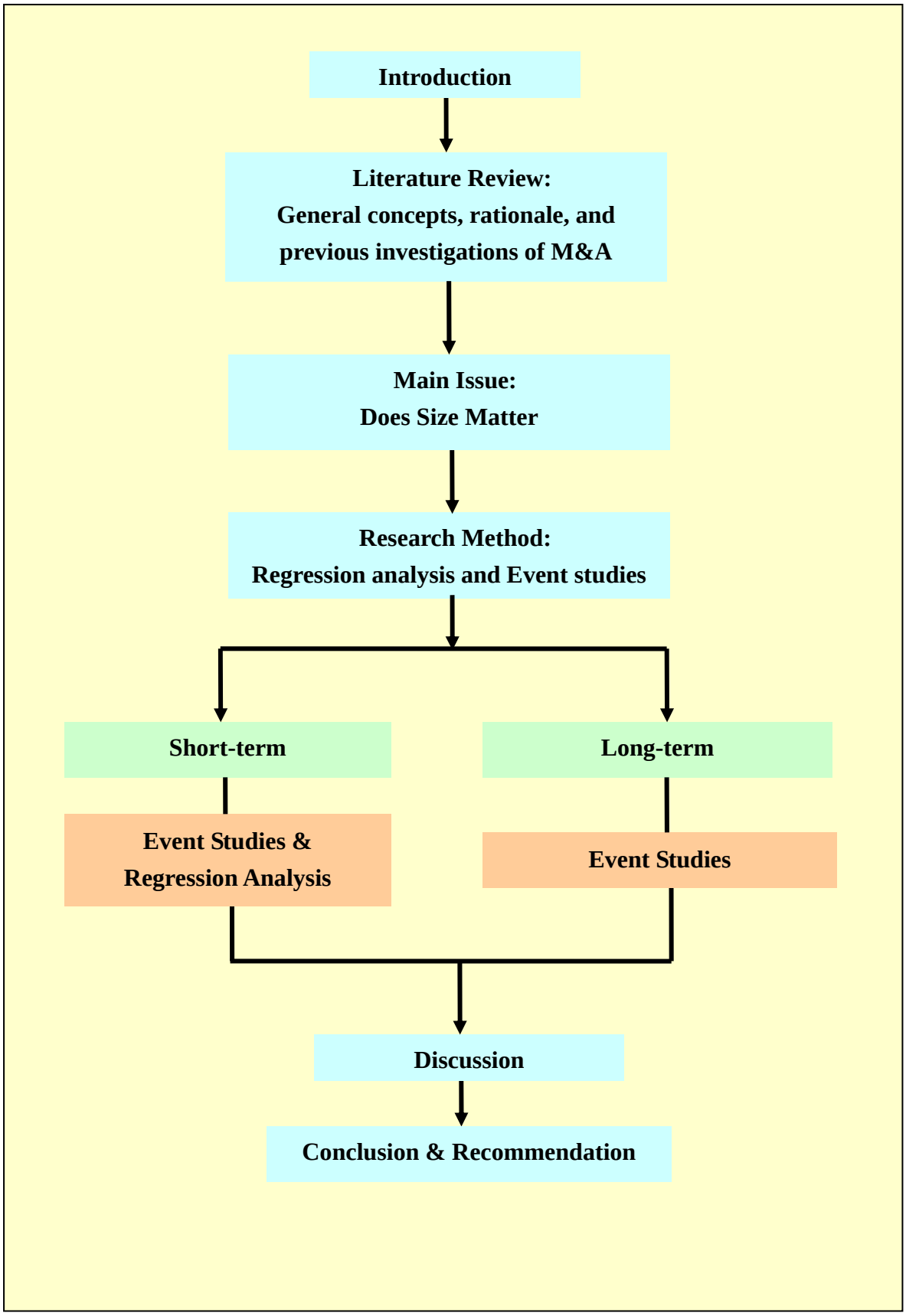


Figure 1.1 the Structure of the Dissertation

Source: Author

2. LITERATURE REVIEW: A POST-MERGER PERFORMANCE

Chapter 2 provides general information on and an explanation of the principles behind M&A, based on which the concepts of post-merger performance will be introduced, and the discussion will then be linked to the issue of relative size of combing firms. Further discussion in the sections will be as follows: Section 2.1 provides a definition of M&As. Section 2.2 generalizes the motives for M&A. Section 2.3 and 2.4 discuss the types and the process of a merger. Section 2.5 introduces the assessment measures which have been used for post-merger performance. Section 2.6 consolidates the empirical results of M&A. Section 2.7 discusses the probable factors of influencing post-merger performance which have been investigated by researchers. Finally, a summary and conclusions will be provided in section 2.8.

2.1 The Definition of M&A

The terms ‘merger’ and ‘acquisition’ have different meanings, although they are often referred to in the same context and used interchangeably. A merger is a combination of two business entities, typically organizations of similar types, and results in the formation of a single business enterprise (Gauphan 2005). Usually, the shareholders of the combined firms remain as joint owners of the combined entity. In contrast to a merger, an acquisition is an activity where one firm purchases the assets or shares of another firm. When an acquisition takes place, the acquired firm becomes the subsidiary of the acquirer. (Sudarsanam 2003) In this dissertation, the term ‘merger’ is usually used to represent mergers and acquisitions.

2.2 The Motives for M&A

M&A is an activity by which two companies are combined into one in order to achieve desired strategic or business objectives. (Sudarsanam 2003) According to Gauphan (2005), the most common objectives of M&A can be classified into two categories: the objective of growth and the objective of synergy. In addition to those two certain motives of mergers, a hypothetical reason can also explain why mergers are conducted: the managers' hubris. The motives and the reason are discussed below.

- **Growth**

Firms are always seeking growth opportunities. M&A provides a route to growth that is an alternative to organic growth. M&A enables companies to expand their businesses with a ready-made business operation instead of having to develop a new business from the beginning (Gauphan 2005). Growth can be represented in several ways: expansion of market shares, increase in sales volume, and geographical extension of the business. M&A helps firms grow by achieving one of the above possibilities for business expansion.

- **Synergy**

Another objective for M&A activities is synergy. Synergy is the benefits obtained through the amalgamation of two firms, with the aim of achieving 1+1>2. According to Sudarsanam (2003), synergy can be represented from several perspectives, including economies of scale, economies of scope, and economies of learning.

- Economies of scale come from reducing the per-unit cost, such as costs of R&D

investment, distribution, and advertisement, while increasing the size or scale of a company's operation in a given period.

- ✧ Economies of scope refer to gaining competitive advantage by transferring existing skills instead of creating new ones. Examples of this advantage include products, technology know-how, market knowledge, and customer relationships.

- ✧ The benefits of economies of learning occur when two companies share their accumulated knowledge and experience, so that there is a net increase in the overall organizational learning capacity.

- ➢ **Hubris**

This reason for mergers relate to the issues of corporate governance and agency cost. The problem of hubris occurs when managers have an unrealistic sense of their own skills and talent, leading them to believe that they are capable of obtaining gains from the acquisition of another institution. In fact, however, they are no more capable than others (Pillof & Santomero 1997). Apart from over-confidence, in some cases it might be the managers' self-interest or ambition that leads to the M&A activities. When the firms merge in relation to this motive, it is quite possible that the merged firms will not have improved performance due to over-confidence or self-interest.

2.3 The Types of Merger

From the strategic managerial point of view, any merger can be one of several types, including: horizontal, vertical, congeneric, conglomerate M&A, and leveraged buyout (LBO), and M&A in fragmented industries, as described in the following paragraphs.

- **Horizontal Merger**

A horizontal M&A is an amalgamation between two companies in the same line of business. This form of M&A results in the expansion of a firm's operation in a given product line and simultaneously eliminates the competitors, i.e. it is designed to increase market power.

- **Vertical Merger**

A vertical M&A is the consolidation with the company's suppliers or customers. The benefit of this type of M&A is in terms of the firm's ability to control the raw materials or the product distribution. Controlling either the supply or customer side makes the company's operation chain more stable and predictable.

- **Congeneric Merger**

Congeneric M&A is the combination of firms in the same industry but operating in different business lines. This type of M&A aims to capitalize benefits through sharing the same sales and distribution channels to reach the same customers of both businesses.

- **Conglomerate Merger**

Conglomerate M&A is the combination of two firms in unrelated industries. Firms carry out this kind of M&A to reduce risks due to different seasonal or cyclical patterns of sales and earnings.

- **LBO**

LBO is the situation in which a small group of investors buy all the publicly-held shares and thereby transform the firm into private owned entity. The objective of LBO is to operate the firm privately for several years, and then take the firm public again. The small group of investors aims to 'cash out' after the assessed value of the firm increases after operating privately for a certain period of time.

- **M&A in Consolidating Industries**

Fragmented industries contain a great number of very small firms selling a single product or a small range of related products. Consolidation between these firms enables them to create value through cost savings, revenue enhancement, and new growth opportunities.

2.4 The Process of M&A and the Post-Merger Stage

An M&A activity unfolds in different stages. It can be divided into three main stages simply in terms of the different time phases: pre-merger planning, merger deal-making, and post-merger management. Apart from time-based division, Sudarsanam (2003) divided M&A process into five main stages with their own missions. The five-stage (5-S) model includes: corporate strategy, organizing for acquisition, deal structuring and negotiation, post-merger integration, and post-merger audit and organization learning. Figure 2.1 compares the different divisions. The following paragraph will discuss the different stages in the process of M&A.

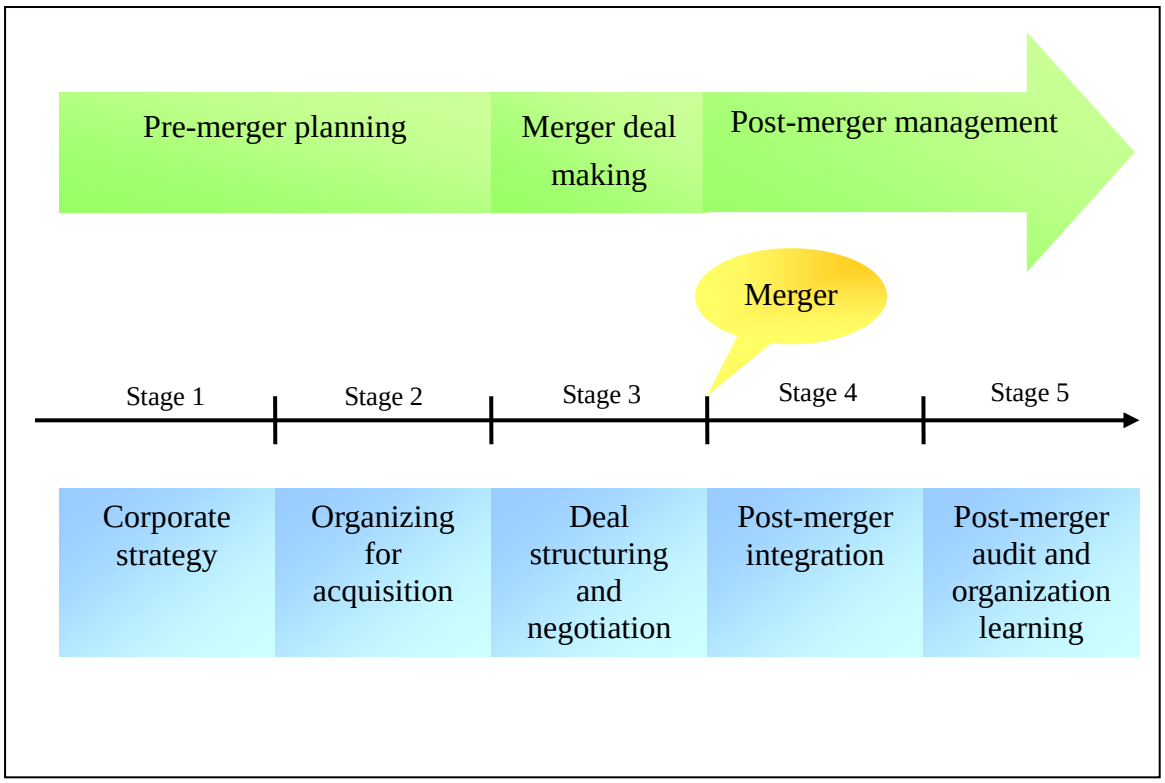


Figure 2.1 the Process of M&A
Source: Author

- **Pre-Merger Planning**

In the pre-M&A stage, the M&A strategy is first made to fit the objective of the entity. The firm then lays down the criteria for potential targets of M&A, according to the strategic objectives and value-creation logic of the firm's corporate strategy and business model. This stage corresponds to the first and second stages of Sudarsanam's 5-S model.

- **Merger Deal-Making**

In this stage of the M&A deal-making, normally, proper negotiation should be carried out between two potential merger companies. The currency used to close the deal and the due diligence should be decided at this stage. This stage corresponds to the third stage in the 5-S model.

- **Post-Merger Management**

In the post-merger management stage, two firms have already combined into one, and proper integration should be done in the merged company, so that the new organization can operate smoothly. In addition, a well-planned post-merger audit helps the firms to learn from the experience of M&A, which will be the foundation for possible further M&A in the future. The post-merger management stage refers to the fourth and fifth stage in the 5-S model. These two stages are also the main fields which this dissertation focuses on. Therefore, the discussion and analysis in the following sections and chapters will all be constructed on those two stages.

2.5 Measuring Post-Merger Performances

Post-merger performance can be divided into short-run and long-run in consistent with the fourth and fifth stages of 5-S model discussed in the previous section. To measure how firms perform after mergers, it is determined by the impact on shareholders' value, since shareholders are the owners of a company. Overall, post-merger performance review can be measured from two different aspects: market assessment and operating performance assessment (Sudarsanam 2003).

- **Market Assessment**

Market assessment uses the abnormal return of shares to assess post-merger performance. Abnormal return can be measured by calculating the differences between the actual return and the expected return of shares. Sheng and Li (2000) consolidated three ways of measuring the expected return: Mean-Adjusted Return Model (MARM), Market-Adjusted Return Model (MKARM), and Capital Asset

Pricing Model (CAPM). The difference between actual and expected return is viewed as the impact of the M&A on the merged companies.

When using MARM, the investigators compare the actual return to the company's average return during a period of time before the merger. The investigator can use MKARM as well, comparing the actual return to the expected market return. Moreover, CAPM provides the expected return for a share by using the relationship between risks and the expected return on a company's share. Using either way of calculating the expected return of a merged company and then comparing it to the actual return for the share, the post-merger performance can be measured by analyzing whether the abnormal returns are positive or negative.

- **Operating Performance Assessment**

In contrast with the market assessment, when measuring the post-merger performance using the operating performance assessment, accounting data are used to observe how the returns on investment behave. Operating performances are usually measured by the ratios such as return on assets (ROA), return on equity (ROE), and operating cash flow return (OCFR). Sudarsanam (2003) collected several studies investigating long-run post-merger performance by using either ROA, ROE or OCFR.

Similar to the methods discussed under the market assessment, when measuring excess operating performance, three ways have been used by the previous investigators: first, comparing the actual performance to which of the firms in the same industry; second, comparing the actual performance to the average performance of the company in a pre-merger period; and third, comparing the actual performance to the matched non-merging firms. Using either way of calculating the expected

operating performance of a merged company and then comparing it to the actual ones, the post-merger operating performance can be measured by analyzing whether excess performance is positive or negative.

The two aspects above present different viewpoints: the assessment of the expected return of the share is forward-looking, while the assessment of accounting numbers of operating performance is backward-looking. Both perspectives make it possible to assess the post-merger performance.

2.6 The Results of Empirical Post-Merger Performance

According to ground-breaking results from global research conducted by KPMG International, 83% of corporate mergers and acquisitions fail to enhance shareholder value (PR Newswire 1999). Similarly, from the viewpoints of academic community, the most results of empirical post-merger performance in the long run are, in fact, negative. It is concluded by the previous researchers that firms experience significantly negative abnormal returns over one to three years after the merger. The researchers who made the same conclusion include: Langetieg (1978), Asquith (1983), and Magenheim and Mueller (1988) (Agrawal *et al.* 1992).

The results hold under both market assessments and operating performance assessments. By reviewing post-merger performance using share market assessment, Agrawal & Jaffe (1999) collected and analyzed the empirical studies and concluded that the cumulative average abnormal return is negative in the long term. Similarly, the collection of empirical studies of the US, the UK, and Continental Europe by Sudarsanam (2003), using operating-performance assessment, showed that in the long-run, most post-merger performance declines. The results of the investigations

above converge to show that the post-merger performance of the merged companies can hardly be argued to have a positive performance in the long-run.

2.7 Different Viewpoints for Investigating Post-merger Performance

Though the empirical results of post-merger performance are largely negative, new M&A deals are still being made each year. The question is: since most merger results are not as good as what have been expected, why firms are still merging? Maybe the real post-merger performance is not the same as the conclusions of the previous researchers. To answer this question, several investigators have done investigation of post-merger performance from various viewpoints and tried to find out the factors which influence post-merger performance.

Agrawal, Jaffe, and Mandelker (1992) have looked into three possible factors of influencing post-merger performance, which includes adjustment of firm size and beta risk, conglomerate or non-conglomerate between combing firms, and the relative size of the acquiring events. The investigation is based on a nearly exhaustive sample of mergers over 1955 to 1987 between NYSE acquirers and NYSE/AMEX targets by using market assessment. The conclusion of their investigation states that after adjusting for the firm size effect as well as beta risk, their results still indicate that stockholders of acquiring firms experience a statistically significant wealth loss of about 10% over five years after the merger completion date. In addition, there is no significant evidence for both conglomerate and relative firm size to conclude that they are factors influencing post-merger performance.

Rau and Vermaelen (1998) examined a sample of 3169 mergers and 348 tender in the U.S between 1980 and 1991 from the view points of different book-to-market ratios.

They found that the long-term underperformance of acquiring firms in mergers is predominantly caused by the poor post-acquisition performance of low book-to-market (glamour) firms, who perform much worse than other glamour stocks and earn significant negative bias-adjusted abnormal returns of 17% in mergers. In addition, specifically, in contrast to value bidders, they concluded that glamour bidders in both 100% cash-financed and 100% equity-financed mergers significantly under-perform after the merger. They described the results by suggesting that companies with low book-to-market ratios tend to make relatively poor acquisition decisions, in general.

Cheng and Leung (2004) investigated the short-term return performance and long-term operating performance of 36 partial mergers in Hong Kong during the period 1984–1996. The main issue in the investigation is to see if there is different performance between diversifying and non-diversifying M&As. The conclusion of the research stated that both the short-term and long-term performance analyses demonstrate that the diversifying pairs of target and acquiring firms do indeed outperform the non-diversifying pairs.

Megginson, Morgan, and Nail (2004) found a significantly positive relationship between corporate focus and long-term merger performance: Focus-decreasing (FD) mergers result in significantly negative long-term performance with an average 18% loss in stockholder wealth, 9% loss in firm value, and significant declines in operating cash flows three years after merger. Mergers that either preserve or increase focus (FPI) result in marginal improvements in long-term performance. They also concluded that every 10% reduction in focus results in a 9% loss in stockholder wealth, a 4% discount in firm value, and a more than 1% decline in operating

performance. In addition, they tested post-merger performance under different possible influencing factors and found out that cash-financed FPI mergers exhibit the best and stock-financed FD mergers the worst, long-term performance. This investigation was based on 204 corporate mergers occurring between 1977 and 1996 in the U.S.

Ragozzino (2006) examined whether the unique attributes of new ventures cause these firms to experience different M&A outcomes from established firms. The investigation was based on acquisitions of high-technology firms by the US bidders between the years 1992 and 2000. Drawing from a sample of high-technology acquisitions, the results showed that new ventures experience lower average performance in general, as well as when the target is itself a new venture. Yet, they outperform established firms when the target is a privately-held entity. The findings also demonstrated that the challenges and opportunities of firms shift through the first few years of their existence, directly affecting the outcomes of their M&A activity.

Kruse *et al.* (2007) examines the long-term operating performance following 69 mergers of manufacturing firms traded on the Tokyo Stock Exchange during 1969 to 1999. What worth mentioning is the evidence of improvements in operating performance for the entire samples. They investigated the post-merger performance by concluding that the pre- and post-merger performance is highly correlated; the long-term performance is significantly greater following mergers of firms operating in different industries; Increases in employment surrounding the mergers are positively related to post-merger performance among diversifying mergers and mergers completed before the peak of the equity bubble in 1989. However, they did not find existing relationships among merging firms a significantly factor for better

post-merger performance.

The previous literatures reviewed in this section discuss the possible factors which might influence post-merger performance investigated by the previous researchers. Some of them proved their hypotheses with significant results, but some did not. The reviewed literatures are summarized in table 2.1. In the next section, the hypothesized factor to influence post-merger performance in this dissertation is to be introduced.

Table 2.1

The Summary of Different Viewpoints for Investigating Post-merger Performance from the Previous Researchers

Author	**Samples**	**Factors**	**Results**
Agrawal, Jaffe, and Mandelker (1992)	765 mergers in the U.S., 1955-87	**1.** Firm size and beta risk **2.** Conglomerate vs. non-conglomerate	Not significant
Rau and Vermaelen (1998)	3169 mergers and 348 tender offers in the U.S, 1980-91	Book-to-market ratios of the acquiring companies	Low book-to-market firms perform much worse
Cheng and Leung (2004)	36 partial mergers in HK, 1984–1996	Diversifying vs. non-diversifying	Diversifying pairs outperform the non-diversifying pairs
Megginson, Morgan, and Nail (2004)	204 corporate mergers in the U.S., 1977-96	Preserve or increasing focus vs. focus decreasing	Significantly positive relationship between corporate focus and post-merger performance in the long-term
Ragozzino (2006)	445 high-tech firms by the US bidders, 1992-2000	New ventures vs. established acquiring companies	New ventures experience lower average performance in general
Kruse *et al.* (2007)	69 mergers of manufacturing firms in JP, 1969 -99.	**1.** Relationship between pre-merger and post-merger **2.** Increasing employments surrounding the mergers **3.** Existing relationship between the combing firms	**1.** Positive correlated **2.** Positive correlated **3.** Not significant

Source: Author

2.8 Summary and Conclusion

Chapter 2 reviews general concepts and principles of M&A. M&A is the consolidation of two companies in order to achieve desired corporate goals. By integrating the existing resources with the merged partners, the merged companies seek opportunities for growth and synergy, including business expansion, economies of scale, and economies of scope.

From the managerial viewpoint, each M&A activity falls under one of several categories, and different types of mergers aim at different results and benefits. The overall M&A process is divided into pre-merger planning, merger deal-making, and post-merger management. The investigation in this dissertation focuses on investigating the post-merger performance at the post-merger management stage. The stage contains two sub-stages in 5-S Model: post-merger integration and post-merger audit and organization learning. Two types of assessments can be used to measure the post-merger performances from different aspects, including market assessment and operating performance assessment.

The empirical evidence argues that most M&A activities do not necessarily have positive performance in the long-run. Due to the negative results being contrary to the motives of M&A, several investigators have done investigation of post-merger performance from various viewpoints and tried to find out the factors which influence post-merger performance. The investigated factors are such as: conglomerate vs. non-conglomerate mergers, diversifying business or focus businesses, different book-to-market ratios for acquiring companies, and existing relationship of combining firms, etc. Based on the discussion above, in the next section, the hypothesized factor to influence post-merger performance in this dissertation is to be introduced.

3. THE MAIN ISSUE: DOES SIZE MATTER?

This chapter discusses the main issues of the dissertation. The hypotheses and arguments will be discussed in the following sections: Section 3.1 will offer the introduction of the role which relative size plays in M&A deals. Section 3.2 will define what relative size of combing firms is. Section 3.3 will discuss the issue of relative size which relates to short-run (i.e. post-integration stage as the 4th stage in 5-S model) post-merger performance. Section 3.4 will discuss the arguments of relative size relating to long-run (the 5th stage in 5-S model) post-merger performance. Section 3.5 will provide the summary of this chapter.

3.1 Relative Size of the Combining Firms in M&A Deals

Organization size shapes the structure design of company and plays an important in culture composition (Greenburg 1999). It could be inferred that different organization sizes would result in different cultures. Therefore, talking about mergers and acquisitions, two combing firms with different organization sizes might yield culture integration problems. Poor culture fit or incompatibility is likely to result in considerable fragmentation, uncertainty and cultural ambiguity, which may be experienced as stressful by organization members. Such stressful experience may lead to their loss of morale, loss of commitment, confusion and helplessness, and may have a dysfunctional impact on organizational performance (Carey 2000).

Relative firm size between two firms is also connected to the relative power of competition and cooperation. Intuitively speaking, when one power is largely greater than the other, the relatively smaller power might be integrated into the large one easily. On the other hand, when two powers are about equal, to integrate them

effectively might be harder.

The well-known merger example can be taken by the case of Daimler-Benz and Chrysler, which took place in 1998, however, did not turn out to be very successful. The major issue behind this merger case is believed to be the culture conflicts between two almost equal firms combining into one. The nine-year merger ended up with the Germany Daimler group selling 80.1% shares of Chrysler to a private equity group in the middle of May, 2007 (Carnews 2007).

Different from Daimler-Chrysler, the example of Cisco turns out to be a successful one. Cisco has acquired 125 companies since 1993, and is expected to acquire more in the future. The most acquired companies are relatively much smaller than Cisco. With acquiring those smaller firms, the net sales of Cisco have been grown from $2 billion in 1995 to its fourteen-times, $28.5 billion, in 2006 (Cisco 2007).

The two extremely different cases above might have released some information about the issue of relative size: though both mergers and acquisitions are combinations of companies, the results can be very different. Relative size of the combined firms could be assumed as a probable factor for post-M&A performance, because different sizes of combinations would lead to different levels of culture integration conflicts.

3.2 The Definition of Relative Size

Relative size of the combining firms refers to the relative firm size between an acquiring company and its target company.

Agrawal *et al.* (1992) argued that the acquisition of a relatively large target is likely to be a more important economic event for the acquirer than is the acquisition of a

relatively small target. Thus, if the post-merger underperformance reflects the impact of the merger, underperformance should be greater when the target is relatively large. However, their investigation was only based on market assessment by measuring the share returns. Therefore, in this dissertation, the investigation would be further extent by using both market and operating performance assessments. In addition, the relatives size issue will be invested both in the short-term and long-term, seeing how relative size between combining firms influence the post-M&A performance.

In the short-term, the investigation would focus on relative size between combining firms and its connection to the performance percentage change comparing to the pre-merger stages of the newly combined firms. In the long-term, the investigation would be extent to how different relative size between combining firms would influence the long-term post-merger performance. Moreover, the impact of the relative size would also be observed by seeing if there is a trend as the merger integration time goes by. The following sections will lead more detailed discussion of the investigation.

3.3 The Impact of Relative Size on Post-merger Performance in the Short-Run

This section is divided into two subsections, where section 3.3.1 will develop the first argument of the post-merger performance in the short-run, and section 3.3.2 will develop the argument of the relative size issue connects to post-merger performance in the short-term.

3.3.1 The Argument for the Overall Short-run Post-merger Performance

Post-M&A integration is such a big deal because organizations have different

personalities and attitudes of dealing things just like people (Drennan 1992). When it comes to M&A, culture differences between combining organizations become one of the most critical issues in corporate integration. Two reasons explain the hard points of integration: First, the compositions of culture are very complex. An organization's culture is embodied in its collective value system, beliefs, norms, ideologies, myths and rituals. They motivate people and become valuable sources of efficiency and effectiveness (Sudarsanam 2003). Hence, there are so many dimensions have to be taken in to consideration for integrating two different entities well. Second, most employees resist change. Once employees having been used to one culture are forced to adjust or adapt to another culture, the culture change become stress and will negatively reduce employees' performance (DuBrin 2005). Since the compositions of culture are very complex, and most people resist change, to completely integrate two organizations well takes numerous time and efforts.

Due to necessary time and efforts for complete integration, it could be implied that at the beginning of post-M&A stages, the new start integration might be in an anarchical condition, and this kind of condition could influence performance of the combined firms. It is pointed out by Angwin (2004) that the first 100 days is a critical period for post-M&A success, because most integration actions are launched at the time. Combing the arguments of the probable anarchical condition and the critical period of the first 100 days, the first issue in this dissertation is to investigate post-M&A performance of newly combined firms in the first quarter, seeing if the phenomenon of relatively negative performance exists in those firms.

3.3.2 Connecting the Relative Size Issue to Short-run Post-merger Performance

As mentioned in section 3.1, relative firm size between two firms is connected to the

relative power of competition and cooperation. Thus, if the post-merger underperformance reflects the impact of the merger, underperformance should be greater when the target is relatively large (Agrawal *et al.* 1992). Due to the argument above, the investigation would be done by seeing the relation between relative size and post-merger performance in the short-term.

In addition to the issue of relative size between combining firms, 'absolute size' would also be discussed at the same time. The absolute sizes here refer to the size of an acquirer. The reason for discussing the absolute size is that though relative size between combing firms, representing the relative power between two entities, might play an important role in post-merger integration, the absolute size of the acquirer might also influence the integration results because larger acquirers might have much more sources and integrating ability than smaller acquirers, so that the results that how synergies are realized might be different. After all, to consider both relative size and absolute in merger deals make the overall discussion more completed and robust.

3.4 The Impact of Relative Size on Post-merger Performance in the Long-Run

In the investigation of post-merger performance in the long-run, two main aims are presented in this section.

Firstly, because the empirical evidence of the overall post-merger performance is still controversial as discussed in the previous chapter, the dissertation aims to analyze how firms perform after mergers within five years.

Secondly, to continue the investigation of relative size in the short-run, the dissertation aims to investigate how the impact of relative firm size changes (if any) in

the long-run.

Through the investigation of both short-run and long-run, the issue of relative firm size can be more completely analyzed and discussed.

3.5 Summary and Conclusion

Chapter 3 discusses the main issues of the dissertation- Does relative size between combining firms matter? Because organization size shapes the structure design of company and plays an important role in culture composition, combining companies with different sizes in M&A deals might lead to different post-merger performance. Therefore, this dissertation assumes relative size of the combined firms to be a likely factor for post-M&A performance.

In order to verify the arguments above, the main investigating objectives in this dissertation are to:

1. Analyze the short-run post-merger performance for the first quarter, seeing if the performance is relatively negative due to the anarchical condition of the newly combination.

2. Analyze whether relative size of the combining firms is a factor for short-run performance change.

3. In addition to relative size, analyze whether absolute size of the acquiring firms is a factor for short-run performance change.

4. Analyze the long-run post-merger performance for up to five years after mergers, seeing how the selected companies in this dissertation had performed.

5. Analyze whether relative size of the combining firms is a factor for long-run performance change.

After generalizing the main objectives of the dissertation, next chapter is going to provide suitable research method and data selection criterion.

4. METHODOLOGY, DATA, AND RESEARCH METHODS

Chapter 4 describes the research methods of this dissertation. First, the philosophical stance (i.e. Methodology) is discussed in section 4.1. Following this, the secondary research and the data used is introduced in section 4.2. Two methods of regression analysis and event study are used in this dissertation, so the two research methods are introduced in section 4.3 and 4.4 respectively. Finally, this chapter ends with a discussion of the quality of the research in section 4.5. A summary is provided in section 4.6.

4.1 Philosophical Stance

The purpose of this dissertation is to investigate whether relative size of the combining firms in M&A deals is a factor for post-merger performance. The investigation first undertakes to collect the theories for mergers and acquisitions and post-merger performance. Based on the theories, the arguments are developed. By analyzing the collected market and the accounting data, the results of the dissertation would used to see whether the arguments are proved or not. Consequently, the investigation takes a deductive approach. Deduction is a type of reasoning that proceeds from general principles or premises to derive particular information (Wikipedia 2008). Rather than moving from fragmentary details to a connected view of a particular situation, the deductive approach enables researchers to find general answers to the arguments and hypotheses through testing the observed data (Gray 2004).

4.2 Data from Secondary Research

The overall investigation in this dissertation falls under the category of secondary research. The data needed for analyzing post-merger performance and its connection to relative size of the combining firms are collected from two data bases: Security Data Company (SDC Platinum) which provides worldwide data of global M&A events and Standard & Poor's Research Insight COMPUSTAT (COMPUSTAT) which contains financial and market information for extensive coverage of the worldwide marketplace. The data collected are divided into two steps:

1. Collecting data of M&A deals: The analyzed data in this dissertation is collected from SDC Platinum, concentrating in the 100%[1] M&A deals between public high-technology (except biotechnology[2]) companies announced from 2000 to 2001 in the U.S.A.

2. Collecting financial data of the merged firms: After selecting the data of M&A deals, the financial data of those firms would be collected by using COMPUSTAT. The financial data needed include return on assets, return on equity, return on operating cash flows, stock returns, market value, and book value of the acquired firms.

The data is collected via two-step data collecting processes: Firstly, the M&A events are collected from SDC Platinum. Secondly, those companies contained in COMPUSTAT are preserved for final research data. Overall, 266 M&A deals are collected from SDC Platinum, and 47 repetitions are taken out. Among those 219

[1] It means the acquired companies are acquired or merged as a whole, but not partially.
[2] It is pointed out by Ragozzino (2006) that according to American Electronic Association, current U.S. government statistics do not allow clearly to identify which portion is bio and which is tech. Therefore, the biotechnology industry was not included.

deals, only 128 acquiring companies are contained by COMPUSTAT. The deals with completed financial data within the event windows defined in this dissertation are only 74; therefore, these 74 deals would be the final database of this dissertation.

4.3 Regression Analysis

Regression analysis is a technique usually used to examine the relation of a dependent variable (response variable) to specified independent variables (explanatory variables) (Wikipedia 2008). The analysis method is also used in several previous researches related to M&A issues. For instance, Cheng and Leung (2004) conducted a regression analysis, using several independent variables to investigate long-term post-merger performance. Similarly, to test for a continuous relationship between changes in corporate focus and long-term performance, Megginson, Morgan, and Nail (2004) perform an ordinary least squares (OLS) regression with their performance metrics as dependent variables and independent variables. Moreover, Ragozzino (2006), as well, used regression analysis in his research for a comparison of new ventures and established firms.

In this dissertation, the regression analysis is used to analyze the relationship between relative firm sizes of the combining firms and the percentage change in stock returns as well as operating performance in the short-run (for the 1st quarter after M&A). The regression analysis is modeled as:

$$\begin{aligned}&\Delta Performanc\,e\%_{(+1Q)}\\&=\alpha+\beta_1(Acquirer'sAbsoluteS\,ize)+B_2(\mathrm{Re}\,lativeSize)+\beta_3(B-T-M_{(-1Q)})\\&+\beta_4D(Conglomera\,te)+\beta_5D(Cash)+\beta_6D(Stock)+\varepsilon_i\end{aligned}$$

The dependent variable refers to the percentage change in the 1st quarter after mergers and acquisitions. The variables will be measured by dividing the abnormal return or excess operating performance [3] to the two-year average performance in the pre-merger windows. For market performance, stock returns are used as the dependant variable; for operating performance, ROE, ROA, and operating cash flow returns are used as independent variables.

Acquirer's absolute size refers to the market value of acquiring companies when M&A announcements are made in merger deals.

Relative firm size in this dissertation is defined by total assets of a target company divided by total assets of its acquiring company, where:

$$\text{Relative Size} = \frac{TatalAssets_{target}}{TotalAssets_{acquirer}}$$

The reason to use total assets as the measurement is due to the availability for collecting the needed data, especially for target companies, where the data of market values for them are unable to get in the database used in this dissertation. The target companies' total assets are given by SDC Platinum. Regarding the relative size of the combining firms, the lower the relative size ratio, the acquirer is much larger than the target; the higher the relative size ratio, the acquirer is relatively less large than the target.

B-T-M refers to book to market ratio of the acquiring companies when the merger announcements were made.

[3] The abnormal return and excess operating performance will be explained in section 4.4.

For conglomerate, the dummy variable equal to 1 if the M&A deals is conglomerate. It is distinguished through the SIC codes provided by SDC Platinum.

For cash, the dummy variable equal to 1 if the deal is purely cash-financed.

For stock, the dummy variable equals to 1 if the deal is closed purely via stock swap.

4.4 Event Study Methodology

The event study was introduced by Ray Ball and Philip Brown (1968) and Eugene Fama et al. (1969) in the late 1960s seminal studies. The methodology they introduced was essentially the same as that which is in use today, and has become the standard method of measuring security price changes in response to an event or announcement (Mackinlay 1997). This research method is widely used by a great number of researchers from different fields; some examples are: Palepu and Ruback (1992) used event study to investigate the post-merger performance for 50 largest U.S. merged corporate between 1979 to mid-1984; Rau and Vermaelen (1998) used event study to investigate the long-term underperformance of bidding firms in mergers and tender offers listed on the NYSE and AMEX covered by both CRSP and COMPUSTAT in 1980 to 1991; Flouris and Swidler (2004) conducted an event study to analyze the impact of American Airline's takeover of Trans World Airlines in 2001. Basically, there are two major objectives when conducting an event study: first, to test the efficient market hypothesis, to see how efficiently the market incorporates new information; second, to examine the wealth impact of an event (Sudarsanam 2003). The purpose in this dissertation is the latter of the two.

Usually, when this methodology is used, the focus is on short-horizon studies to measure the effects of an economic event (Sheng & Li 2000). For example, investigators can measure the abnormal return of shares in relation to an announcement of M&A, earnings, or issuing new debts, using short event windows of a few days around the event (Mackinlay 1997). However, in this dissertation, the investigation centers on the long-horizon event studies, where the post-event windows measuring post-merger performance of the collected data is up to five years (twenty quarters).

4.4.1 Conducting an Long Horizon Adjusted Event Study

Sheng and Li (2000) have generalized four steps for conducting an event study with a large amount of data of short-run share returns. These steps are:

Step 1, identifying the event
Step 2, evaluating the abnormal return
Step 3, testing the abnormal returns with statistical hypothesis testing
Step 4, analyzing and explaining the results

In this dissertation, the event study is applied to each M&A deals in the long-run; therefore, in step 2, the evaluation of the excess operating performance will be added in addition to the abnormal returns. The adjusted steps are:

Step 1, identifying the event
Step 2, evaluating the abnormal return and the excess operating performance
Strep3, testing the abnormal returns and the excess operating performance with statistical hypothesis testing using a Z-test
Step 4, analyzing and explaining the result

Each step is described as below.

Step 1, identifying the event

The event that this dissertation refers to is the merger activities of the collected data. The event window is defined by the effective date of legal completion of the merger. The reason for choosing the completion date instead of the announcement date is that, the investigation focuses on the post-merger performance in the long-term rather than the short-term effect of announcement. The estimation windows are set to be two years (eight quarters) before the mergers, while the post-event windows are set to be five years (twenty quarters) after the mergers, so that the post-merger performance can be observed more completely. The event study windows are presented in figure 4.1.

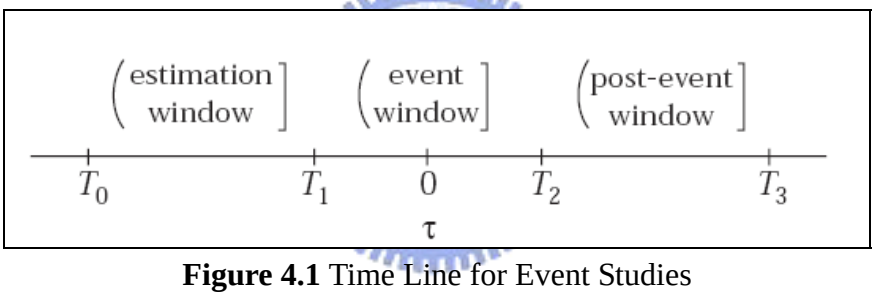


Figure 4.1 Time Line for Event Studies
Source: MacKinlay 1997

Step 2, evaluating abnormal returns and excess operating performance

In this dissertation, 'abnormal returns' refers to the difference between expected and actual returns, while 'excess operating performance' refers to the difference between expected and actual operating performance. The abnormal returns and excess operating performance will be evaluated with the formula based on the model generalized by Sheng and Li (2000). Figure 4.1 helps to describe the models.

Models used for evaluating abnormal returns and excess operating performance are mean-adjusted returns model and mean-adjusted operating performance model:

1. Mean-Adjusted Return Model (Model 1)

The abnormal return for a single firm is

$$AR_{iE} = R_{iE} - \frac{1}{Ti}\sum_{t=t_0}^{t_1} R_{it} \qquad E \in W = [t_2, t_3]$$

where AR_{iE} refers to the abnormal returns of a company i in each post-merger time E, R_{iE} refers to the actual returns of company i in each post-merger time E, $\frac{1}{Ti}\sum_{t=t_0}^{t_1} R_{it}$ refers to the expected returns of company i calculated by averaging the returns of that company in the pre-merger period between t_0 and t_1.

The average abnormal return (AAR) of the all data firms in each time E in the post-merger periods is:

$$AAR_E = \frac{1}{N_E}\sum_{i=1}^{N_E} AR_{iE}$$

where N is the number of the total merging deals in the whole sample.

The cumulated abnormal return for a single firm i from the effective merger time until the time E after mergers is:

$$CAR_{iE} = \sum_{e=T_2}^{\tau_E} (AR_{ie}) \quad e \subset [t_2, t_3]$$

where AR_{ie} refers to the abnormal return of each firm i in each time e after mergers.

The average cumulated average abnormal return (ACAR) for all data firms from the effective merger time until the time E after mergers is:

$$ACAR_E = \frac{1}{N} \sum_{i=1}^{N} (CAR_{iE}) \qquad E \in W = [t_2, t_3]$$

where N is the total number of the merging companies, and E refers to each time of the post-merger period.

2. Mean-Adjusted Operating Performance Model (Model 2)

The excess operating performance for a single firm is

$$AP_{iE} = P_{iE} - \frac{1}{Ti} \sum_{t=t_0}^{t_1} P_{it} \qquad E \in W = [t_2, t_3]$$

where AP_{iE} refers to the excess operating performance of a company i in the post-merger period time E, P_{iE} refers to the actual performance of a company i in

time the post-merger time E, $\frac{1}{Ti}\sum_{t=t_0}^{t_1} P_{it}$ refers to the expected performance calculated by averaging the performance of that company in the period between t_0 and t_1 before merger.

The average excess operating performance (AAP) over all data firms in time E is:

$$AAP_E = \frac{1}{N_E}\sum_{i=1}^{N_E} AP_{iE}$$

where N is the number of securities in the whole sample with a return in event time E.

Step 3, testing the abnormal returns and excess operating performance with statistical hypothesis testing using a Z-test

After the calculation in the previous step, the AR, CAR, and AP of each time period will be calculated. Based on those results, AAR, ACAR, and AAP would also be calculated. In step 3, these calculated data in the post-merger window will be tested through statistical hypothesis testing using a Z-test.

When a Z-test is conducted, the researcher aims to determine if the difference between a sample mean and the population mean is large enough to be statistically significant. In this dissertation, the sample means refer to the AAR and ACAR when conducting the market assessment, AAP when conducting the operating performance assessment. On the other hand, the population mean refers to zero because AAR, ACAR, and AAP for the estimation windows should equal to zero. The null and the

alternative hypotheses for both assessments are as below:

- **For the market assessment**

  AAR:

  H_0 : The average abnormal returns = 0

  H_1 : The average abnormal returns $\neq 0$

  ACAR:

  H_0 : The cumulated average abnormal returns = 0

  H_1 : The cumulated average abnormal returns $\neq 0$

- **For the operating performance assessment**

  AAP:

  H_0 : The average excess operating performance = 0

  H_1 : The average excess operating performance $\neq 0$

The p-value of the two-tailed Z-test is the criterion to judge if the sample means significantly differ from the population mean. When the p-value is small enough and

shows strong evidence, the null hypotheses can be rejected, while the alternative hypotheses can be inferred. On the contrary, if the p-value is large and shows no evidence, the null hypotheses cannot be rejected. The p-value of a test is described as below according to Keller & Warrack (2003):

P-value: 0~0.01 : Highly significant (Overwhelming Evidence)
P-value: 0.01~0.05: Significant (Strong Evidence)
P-value: 0.05~0.1: Not Significant (Weak Evidence):
P-value: 0.1~1.0 : Not Significant (No Evidence)

Step 4, analyzing and explaining the result

The conclusion of the investigation is based on the results of the abnormal returns and the excess operating performance. By considering the abnormal returns of the shares and the excess operating performance using accounting data, the post-merger performance of the selected sample firms can be analyzed and explained.

4.5 Credibility of the Research

The credibility of the research is evaluated in four distinct dimensions, as defined by Yin (2003). These dimensions are construct validity, internal validity, external validity, and reliability, as discussed below.

4.5.1 Construct Validity

Construct validity is concerned with the measurement of abstract concepts and traits (Gray 2004). It helps to assure that the assessment can correctly measure the concepts. In this dissertation, the construct validity is based on the literature review, which provides the academic viewpoints on the proper measuring process and suitable

assessment of post-merger performance. Regression analysis is a technique used to examine the relation of a dependent variable to specified independent variables. Several researchers discussed in section 4.3 had used this analysis method to investigate firms' performance in M&A issues. The event study is commonly applied when measuring the impact of an event, and the market and operating performance assessment is largely used when measuring the post-merger performance according to the literature.

4.5.2 Internal Validity

The internal validity is assured by the data of SDC Platinum and COMPSTAT. The two databases are constructed by professional institutes providing the outstanding data for basic financial analysis.

SDC Platinum is the industry standard for information on new issues, M&A, syndicated loans, private equity, project finance, poison pills, and more. Backed by Thomson Financial's international team of expert analysts, SDC Platinum satisfies the need for a global reach from a local perspective. As the world's foremost financial transactions database, SDC Platinum is the source for the most thorough and accurate account of the global financial marketplace (Thomson 2008).

Standard & Poor's Compustat data is a well-known database established since 1962. It is largely used by the global financial community for the vital company, index and industry information that supports their financial models and proprietary company and industry analysis. From global finance giants to boutique hedge funds, institutional investors count on Compustat data for its unparalleled quality, global history, breadth and depth (Standard & Poor's 2008).

4.5.3 External Validity

External validity is the extent to which is possible to generalize from the data to a larger population or setting (Gray 2004). Because the empirical research results are often influenced by different scopes of industry, geography, and time, the external validity is always not 100% assured. However, the research in this dissertation is conducted in objective research methods and processes, so that the analysis results could become valuable reference for future researchers in the same field.

4.5.4 Reliability

Reliability is an indication of consistency between two measurements of the same thing (Gray 2004). In this dissertation, the measurement used for investigation is the fixed historical data, and the time period of measurement is defined. Besides, a standardized process of the event study is applied as well. Based on all these, no matter how many times the investigation might be repeated, the result of other measurements will be the same. Therefore, the reliability of this dissertation can in this way be ensured.

4.6 Summary and Conclusions

The dissertation aims to investigate whether relative size of the combining firms in M&A deals is a factor for post-merger performance. By analyzing the collected market and the accounting data, the results of the dissertation would used to see whether the arguments are proved or not. Consequently, the investigation takes a deductive approach. The research in this dissertation is under the category of secondary research, and the data needed is collected from two databases of SDC

Platinum and COPUSTAT. 74 M&A deals are the final research data; which were 100% M&A completed between 2000 and 2001 in the U.S.A, and both combining firms are public. Regression Analysis will be conducted to analyze the relationship between relative firm size and the short-run percentage changes of stock return and operating performance. Event study analysis will be conducted to analyze the post-merger performance in the long-run, and four steps are included in. The conclusion and explanation will be based on the results of these analyses in the later chapters.

The construct validity of the investigation is established by the literature review, which shows that regression analysis, event study, and the measuring assessment have been commonly used by the previous investigators. The internal validity is assured by these two databases: SDC Platinum and COMPUSTAT, both largely used by analysts in the global financial community. The external validity cannot be 100% assured due to possible impact of different industrial, geographical, and time horizons, but the investigation will be conducted under objective methods and processes for becoming valuable references to the future researchers. Finally, due to the fact that all the data used in the dissertation is fixed and historical data, the reliability can be ensured.

5. EMPIRICAL ANALYSIS RESULTS

Chapter 5 presents the analysis results of post-merger performance for the short-term (for the first quarter after mergers) and the long-term (up to five years after mergers). Section 5.1 presents the short-term post-merger performance, while section 5.2 presents the long-term post-merger performance. Section 5.3 summarizes the research results.

5.1 Analysis for Merger Impacts in the Short-term and the Connection to Relative Sizes between Combining Firms

To prove the arguments of the short-term post-merger performance within the first quarter after mergers, two analyses are done in this section. Section 5.1.1 presents the percentage change analysis using event studies. Section 5.1.2 presents the results of regression analysis.

5.1.1 Percentage Change Analysis

When analyzing the probable merger impacts in the short-run (the 1st quarter after mergers), it is to calculate the change of performance to the average performance in the estimation windows in both market and operating assessments, as discussed in chapter 3. When analyzing the impact by using market assessment, change in stock returns will be divided by average stock returns in the estimation windows. On the other hands, when analyzing the impact by using operating performance assessment, change in ROA and ROE will be divided by average ROA and ROE in the estimation

windows.[4]

In the short-term size impact analysis, there are 58 samples in total, excluding a few outliers. Two parts are included in: absolute size analysis and relative size analysis.

Absolute Size Analysis

In the analysis of absolute size, it was broken into five different groups, the whole sample, the first, the second, the third, and the fourth quartiles. The quartiles are arranged by absolute sizes of acquiring companies from small to large in order. The analysis for merger impacts in the short term is presented in table 5.1 below.

Table 5.1

Percentage Change in Stock Returns and Operating Performance for the First Quarter after Mergers- Arranged by Absolute Sizes of Acquiring Companies

Mean Percentage change of Post-merger Performance for the First Quarter			
Quartile Group	Stock Return	ROA	ROE
Total Sample (N=58)	-81.45% (-1.4140)***	-42.66% (-1.3986)***	-61.22% (-1.4079)***
1st Quartile (N=14))	-145.44% (-1.1037)***	-37.49% (-0.2929)	-118.09% (-0.5003)*
2nd Quartile (N=15)	-29.50% (-0.1265)*	-52.07% (-0.3959)	-58.11% (-0.5030)*
3rd Quartile (N=15)	-104.13% (-1.0395)***	-40.83% (-0.4230)**	-35.10% (-0.2848)
4th Quartile (N=14)	-40.55% (-0.3075)	-40.75% (-0.3574)	-31.38% (-0.3002)

***,**, * Statistical significance in 2-tailed tests at 1%, 5%, and 10% level, respectively.

Source: Author

[4] Operating Cash Flow Return (OCFR) discussed in chapter 2 is not used in this dissertation due to the data incompleteness for large number of firms in COMPUSTAT.

The whole-sample analysis was shown in the first line in table 5.2. The mean percentage changes for stock returns, ROA, and ROE are -81.45%, -42.66%, and -61.22% respectively, all significantly negative.

According to table 5.1, when the analysis was broken into four different quartiles corresponding to the absolute of the acquiring firms, most of the performances are still significantly negative. It is especially can be seen that stock returns of the first quarter after mergers for most groups are significantly negative. On the other hands, for ROA and ROE, though the average percentage change for ROA and ROE are mostly negative, there is no significant evidence to prove the results.

In spite of the most insignificance for all data, the bar chart in figure 5.1 below can still help observe the percentage change for those three performance measurements. For stock returns and ROA, there is not clear phenomenon observed between different quartiles. However, for ROE, the percentage changes get less negative, from -118.09%, -58.11%, -35.10% to -31.38%, when absolute sizes of the acquiring firms increase. This phenomenon shows that in the first quarter, with the larger size of acquiring companies, the percentage change of ROE gets less negative.

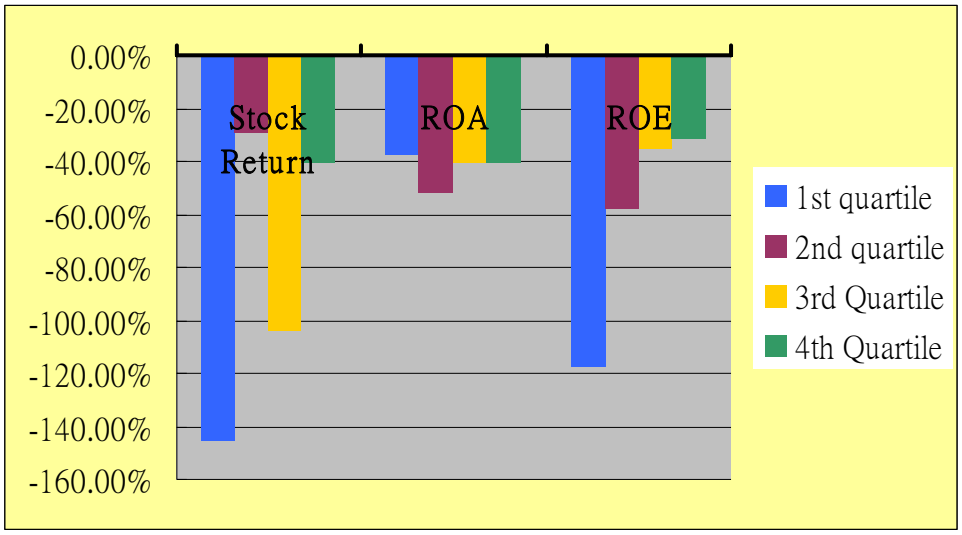


Figure 5.1 Bar chart of merger impact as percentage change of performance for the absolute size groups from the first to the fourth quartile
Source: Author

Relative Size Analysis

In the analysis of relative size, similarly, it was broken into five different groups, the whole sample, the first, the second, the third, and the fourth quartiles. The quartiles are arranged by relative size between combining firms from small to large in order. The analysis for merger impacts in the short term is presented in table 5.2 below.

Table 5.2
Percentage Change in Stock Returns and Operating Performance for the First Quarter after Mergers- Arranged by Relative Sizes of the Two Combining Companies

Mean Percentage change of Post-merger Performance for the First Quarter			
Quartile Group	Stock Return	ROA	ROE
Total Sample (N=58)	-81.45% (-1.4140)***	-42.66% (-1.3986)***	-61.22% (-1.4079)***
1st Quartile (N=14))	-88.80% (-0.6426)**	-15.30% (-0.3660)	-33.52% (-0.1310)*
2nd Quartile (N=15)	-62.83% (-0.3924)*	-57.45% (-0.3316)	-62.61% (-0.3908)*
3rd Quartile (N=15)	-125.14% (-0.9215)**	-56.75% (-0.5301)**	-68.58% (-0.6362)**
4th Quartile (N=14)	-47.24% (-0.2338)	-20.86% (-0.3309)	-97.78% (-0.4437)*

***,**, * Statistical significance in 2-tailed tests at 1%, 5%, and 10% level, respectively.
Source: Author

According to table 5.2, when the analysis was broken into four different quartiles corresponding to the relative size between combining firms, most of the performances are still significantly negative. The bar chart in figure 5.2 below helps observe the percentage change for those three performance measurements more clearly. For stock returns and ROA, there is not clear phenomenon observed between different quartiles, but it can be observed that for stock returns, the fourth quartile has the smallest negative merger impact; while for ROA, the first quartile has the smallest negative merger impact.

However, for ROE, it can be seen that all percentage changes in ROE for different quartiles are all significantly negative; moreover, the percentage changes get more negative, from -33.52%, -62.61%, -68.58% to -97.78%, when relative size increases. This phenomenon shows that in the first quarter, with increasing the size of target companies, the percentage change of ROE gets more negative.

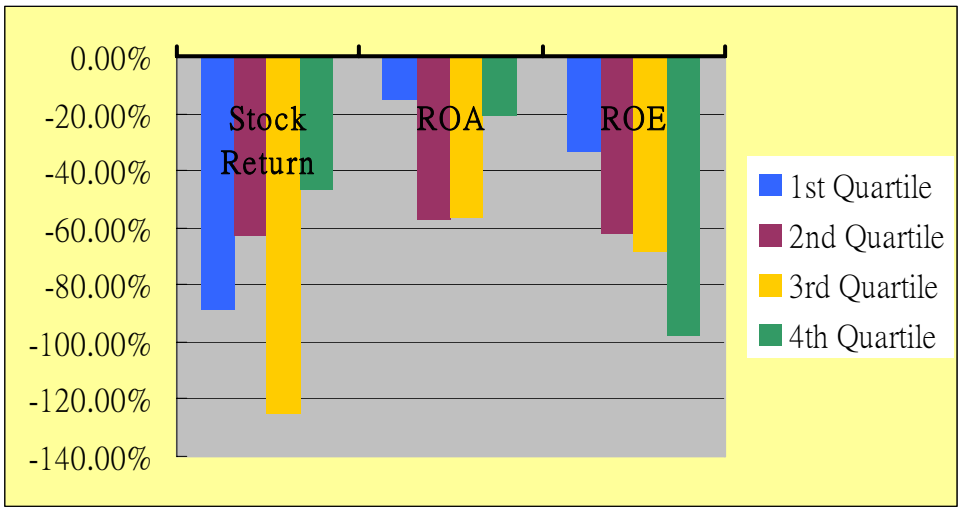


Figure 5.2 Bar chart of merger impact as percentage change of performance for the relative size groups from the first to the fourth quartile
Source: Author

5.1.2 Regression Analysis

Multivariate OLS analysis for the first-quarter percentage changes of stock returns, ROA, and ROE are presented in this section. Panel A in Table 5.3 reports the descriptive statistics of the variables included in the regression model and Panel B presents the results of the regression analysis.

The significance of the association between independent variables and dependent variables are only found in change in stock returns, where absolute size of the acquiring companies and relative size of combining firms are found to be significantly and positively associated with the percentage change of stock returns. The results may be due to the large standard deviation and to an unsystematic relation between the dependent and the independent variables.

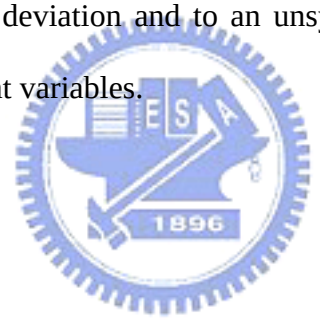


Table 5.3

Multivariate OLS Analysis for the First-quarter Percentage Changes of Stock returns, ROA, and ROE

Panel A: descriptive statistics of variables

	Average	Median	Max.	Min.	S.D.	Sum
△Stock Returns	-81.45%	-116.51%	585.79%	-384.49%	159.34%	
△ROA	-42.66%	-33.18%	303.46%	-345.39%	115.12%	
△ROE	-61.22%	-39.97%	331.99%	-832.18%	155.58%	
Absolute Size (Ln)	8.20	8.25	12.7	3.72	1.93	
Relative Size	25.86%	12.75%	231.57%	0.05%	43.10%	
B_T_M (Acquirers)	41.01%	39.44%	152.16%	4.26%	28.50%	
CONGLOMERATE dummy						37
CASH dummy						11
STOCK dummy						46

Panel B: regression results

	Market Assessment	Operating Performance Assessments	
Independent Variables	△Stock Returns %	△ROA %	△ROE %
Intercept	-3.6986	0.8897	-1.3029
	(-2.8663)***	(0.9001)	(-0.9449)
Absolute Size of Acquirer (Ln)	0.2808	-0.1468	0.0760
	(2.0020)**	(-1.3657)	(0.5071)
Relative Size (St/Sa)	2.0600	-0.4514	0.0815
	(3.2324)***	(-0.9246)	(0.1197)
B-T-M (Acquirers)	0.0860	-0.0037	0.0774
	(0.1116)	(-0.0063)	(0.0940)
CONGLOMERATE dummy	-0.17551	0.3218	0.2984
	(-0. 5815)	(1.3959)	(0.9252)
CASH dummy	-0. 4528	0.9614	0.9656
	(-0.37375)	(1.0359)	(0.7459)
STOCK dummy	-0.0663	1.0826	1.0879
	(-0.0594)	(1.2668)	(0.9127)
F(t-test)	2.1032**	0.7964	0.2578
Adjusted R^2	0.1057	0.0066	0.0745

1. N=58, the explanation of variables is in section 4.3 of this dissertation.
2. ***,* Statistical significance in 2-tailed tests at 1%, 5%, and 10% level, respectively.

Source: Author

5.2 Analysis for Merger Impacts in the Long-term and the Connection to Relative Sizes between Combining Firms

When analyzing long-term post-merger performance, it is to investigate the abnormal returns and cumulated abnormal returns when using market assessment and excess operating performance when using operating performance assessment for the selected companies in the long horizon (in this dissertation up to five years after mergers). Because mean-adjusted model is used in this dissertation, the average returns for stock, ROA, and ROE in the estimation windows are used as expected return and performance to calculate abnormal returns and excess operating performance. Deducting the mean value of the estimation windows from the actual returns and performance in post-event windows will result in the abnormal returns (AR) for stock and excess ROA (EROA) and ROE (EROE) for operating performance.

In the analysis for the long-term size impact, there are 74 samples in total, after filtering out the deals without completed financial information. Similar to the short-term analysis, the analysis was broken into five different groups, the whole sample, the first, the second, the third, and the fourth quartiles, which were arranged by relative size between combining firms from small to large in order. The analysis for post-merger performance in the long-term is presented in table 5.4 below. In table 5.3, the average abnormal returns (AAR), average cumulated abnormal returns (ACAR), average excess ROA (AEROA), and average excess ROE (AEROE) for data are presented in each panel.

Table 5.4

Long-term Post-merger Performance up to Five Years after Mergers

	Quarters After Mergers Completion				
	1-4	5-8	9-12	13-16	17-20
Panel A: Full Sample (N=74)					
AAR(%)	-90.7364	-50.4809	-75.8811	-69.7480	-75.2108
	(-0.5158)***	(-0.2885)***	(-0.44083)***	(-0.5254)***	(-0.5185)***
ACAR(%)	-362.9456	-564.8690	-868.3932	-1147.3852	-1448.2284
	(-0.5427)***	(-0.4756)***	(-0.4818)***	(-0.4997)***	(-0.5067)***
AEROA(%)	-10.2171	-5.0331	-11.6574	3.9470	1.3617
	(-0.4063)***	(-0.1294)**	(-0.3094)***	(0.0919)	(0.0541)
AEROE(%)	-33.1406	-20.2034	-29.5282	-8.4544	-3.5856
	(-0.2964)***	(-0.2950)***	(-0.2884)***	(-0.1657)***	(-0.0951)
Panel B: The First Quartile (N=18)					
AAR(%)	-32.9281	-35.9485	8.4933	-8.0579	-9.1586
	(-0.6596)***	(-0.5871)***	(0.1221)	(-0.1298)	(-0.1766)
ACAR(%)	-131.7124	-275.5064	-241.5332	-273.7648	-310.3992
	(-0.6588)***	(-0.6245)***	(-0.3866)	(-0.3162)	(-0.2889)
AEROA(%)	-8.8434	-13.7685	-9.3861	-3.9658	-3.2211
	(-0.4426)***	(-0.5354)***	(-0.6311)***	(-0.3653)***	(-0.2788)**
AEROE(%)	-13.3244	-25.8194	-18.7472	-7.0708	-5.6745
	(-0.3904)***	(-0.5049)***	(-0.4761)***	(-0.2989)**	(-0.2438)**
Panel C: The Second Quartile (N=19)					
AAR(%)	-92.2997	-88.8911	-100.372	-88.4686	-98.3296
	(-0.3780)***	(-0.4616)***	(-0.4830)***	(-0.5318)***	(-0.5251)***
ACAR(%)	-369.1988	-724.7632	-1126.2512	-1480.1256	-1873.4440
	(-0.3838)	(-0.4607)*	(-0.4874)**	(-0.5057)**	(-0.5101)**
AEROA(%)	-13.7626	-12.3092	-18.9494	-1.1520	1.0512
	(-0.4660)***	(-0.4271)***	(-0.4469)***	(-0.0446)	(0.0401)
AEROE(%)	-21.1666	-36.5945	-42.9327	-14.2344	0.8794
	(-0.6546)***	(-0.4092)***	(-0.5424)***	(-0.2649)**	(0.0243)
Panel D: The Third Quartile (N=18)					
AAR(%)	-104.9507	-48.2990	-101.8907	-77.6555	-91.1132
	(-0.6736)***	(-0.3134)***	(-0.6532)***	(-0.6904)***	(-0.8472)***
ACAR(%)	-419.8028	-612.9988	-1020.5616	-1331.1836	-1695.6364
	(-0.8812)***	(-0.6880)***	(-0.7117)***	(-0.7309)***	(-0.7697)***
AEROA(%)	-11.8852	-4.3586	-24.4002	10.018	-1.6306
	(-0.8820)**	(-0.0782)	(-0.5522)***	(0.1354)	(-0.0925)
AEROE(%)	-53.6258	-27.9504	-35.9807	-22.9585	-14.4186
	(-0.2673)***	(-0.5267)***	(-0.5588)**	(-0.3485)***	(-0.5392)***
Panel E: The Fourth Quartile (N=19)					
AAR(%)	-123.7709	-29.09086	-96.4808	-94.2091	-91.6067
	(-0.6931)***	(-0.12721)	(-0.5079)***	(-0.6523)***	(-0.5449)***
ACAR(%)	-495.0836	-611.4470	-997.3702	-1374.2066	-1740.6334
	(-0.6741)***	(-0.4247)*	(-0.4636)**	(-0.5077)**	(-0.5164)**
AEROA(%)	-6.3566	9.6497	5.5551	10.791	8.8486
	(-0.1984)*	(0.2803)	(-0.1596)	(0.3216)***	(0.2456)**
AEROE(%)	-44.8305	6.17041	-21.3952	6.857	2.8919
	(-0.4778)**	(0.0943)	(-0.1261)	(0.1350)	(0.0545)

***,**, * Statistical significance in 2-tailed tests at 1%, 5%, and 10% level, respectively.

Source: Author

For AAR, the results for the data of whole sample (panel A) show significantly negative in all the periods after mergers, and except the group of the first quartile, the similar results hold in the rest groups. The bar chart of AAR for groups from the first to the fourth quartile is shown in figure 5.3 below. When comparing AAR between each quartile group, the bar chart clearly shows that the first quartile group has the best performance as it always has the smallest negative AAR in all periods. Moreover, in the third year after merger, the AAR for the first quartile group is even positive.

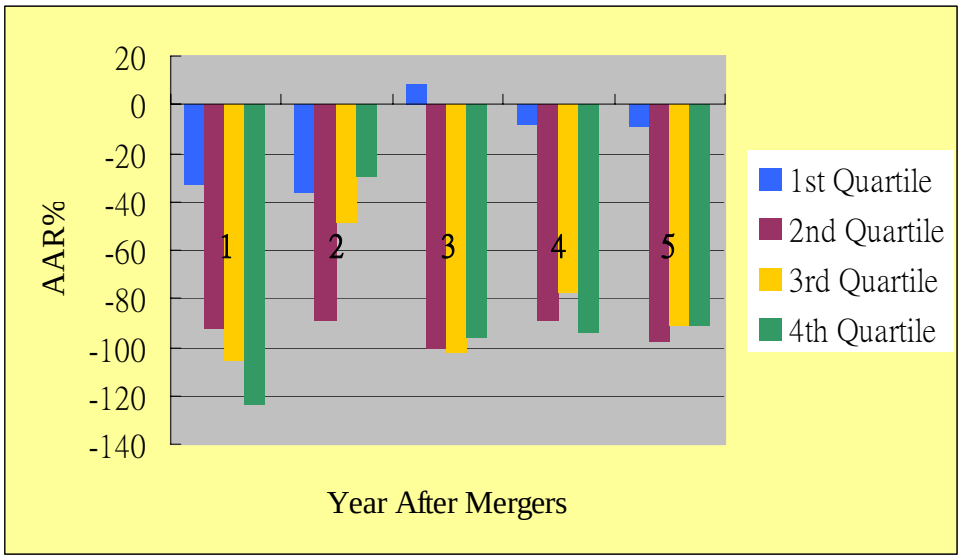


Figure 5.3
Bar Chart of AAR for the Groups from the First to the Fourth Quartile

Source: Author

The analysis result of ACAR is tightly connected to AAR, due to the reason that ACAR is the cumulated result of AAR in different periods. Because AAR for the whole samples is significantly negative, the cumulated results of AAR are significantly negative in all periods as well. Therefore, ACAR for the group of the whole sample increase gradually year after year, from -362.9456 of the first year to -1448.2284 of the fifth year cumulatively. When dividing the whole sample into four equal groups in accordance with relative size between combining firms, most ACAR

for each group is still significantly negative. Figure 5.4 further analyzes the results of ACAR for different groups. It can be observed that comparing to the rest groups, the ACAR for the first-quartile group keep increasing its negative ACAR with a relatively smaller volume each year. On the other hands, other groups show very large increasing in negative ACAR each year.

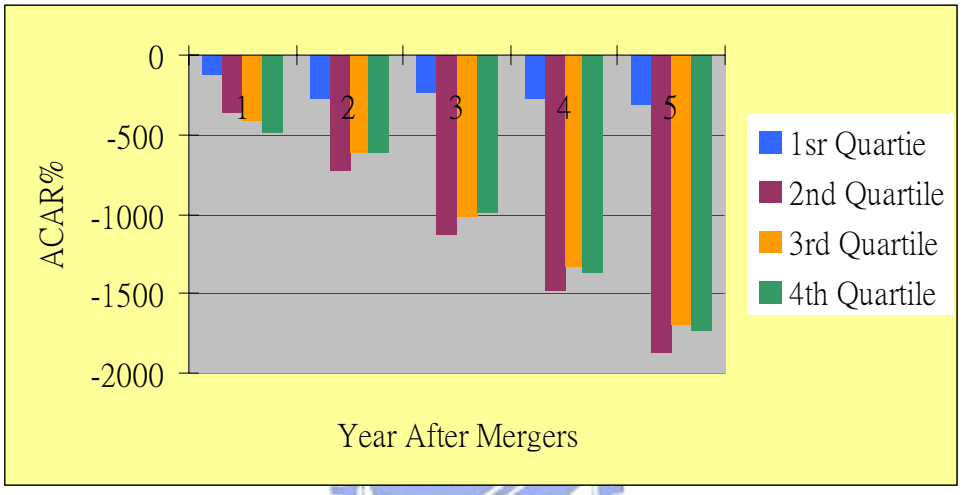


Figure 5.4
Bar Chart of ACAR for the Groups from the First to the Fourth Quartile
Source: Author

For AEROA, the results show significantly negative in the first three years (1-12 quarters after mergers) for the group of whole samples shown in panel A. From the fourth year to the fifth year, the mean performance turned out to be positive, but not significantly different from zero. The similar results roughly hold in research groups of quartiles first, second, and third, showing that the AEROA started to become less negative comparing to the earlier years after mergers no matter significantly or not. However, the results for the fourth quartile shows different picture. The AEROA for the first year is the same as the previous groups, but it becomes positive right starting from the second year after mergers, though not significantly. After the fourth year, the

AEROA for the fourth quartile becomes significantly positive for the rest two years. The bar chart of AEROA for the groups from the first to the fourth quartiles is shown in figure 5.5 as below.

Figure 5.5
Bar Chart of AEROA for the Groups from the First to the Fourth Quartile
Source: Author

For AEROE, the results for full samples show significantly negative for the first four years (1-16 quarter after mergers), but it became less negative as years went by. Extending the investigation to four different quartiles, it shows that the AEROE for the first year is all significantly negative for all groups, and the results for group of first quartile had the smallest AEROE. After the second year, the AEROE for those four groups became better and better corresponding to the timeline. What worth mentioned is to look at the group of the fourth quartile. It can be observed specifically for the fourth quartiles that, different from the formal three groups of the first to the third quartiles, though not significantly, AEROE for the second, fourth, and the fifth year after mergers were positive. The bar chart of AEROE for the groups from the

first to the fourth quartiles is shown in figure 5.6 as below.

Figure 5.6
Bar Chart of AEROA for the Groups from the First to the Fourth Quartile
Source: Author

5.3 Summary and Conclusion

This chapter presents the analysis results of post-merger performance for the short-term (for the first quarter after mergers) and the long-term (up to five years after mergers) For both short-term and long-term analyses, in addition to analyzing the whole samples, the analysis was broken into four quartile groups according to the relative size of combining firms.

In the short-term size impact analysis, there are 58 samples in total. In the percentage change analysis, it was found that for both market and operating performance assessments, percentage changes are all significantly negative. Among the four

quartile groups categorized in order by absolute sizes of the acquiring companies, the percentage change of ROE for the first quartile is found to get more negative for the larger companies. On the other hands, when investigation is done from the relative-size perspective, the percentage change of ROE in the first quarter is especially found to get more negative with decreasing the size difference between the combining companies. The results of multivariate regression did not show much significant relationship between percentage changes in performance and those independent variables. Yet, two significant findings are shown: the positive association between percentage change in stock returns for the first quarter after mergers and relative size of combining firms; the positive association between percentage change and stock returns in the first quarter after mergers and absolute size of the acquiring firms. The unclear results might be due to the large standard deviation and to an unsystematic relation between the dependent and the independent variables.

In the long-horizon event studies for post-merger performance, 74 samples are analyzed in total. Most AAR in the post-event windows is significantly negative, but AAR for the first quartile group was always smaller than other groups. ACAR is associated with the results of AAR, where only the first quartile group keeps relatively lower negative ACAR comparing to the rest groups. AEROA was significantly negative in the first three years after mergers for whole groups and became less negative afterwards AEROA for the fourth quartile group started to become positive, though not significantly, from the second year after mergers. The analysis results for AEROE are similar to AEROA. Most AEROAs are significantly negative during the post-event windows but for the fourth quartile groups. Although not significantly different from zero, most AEROE after the second year turned out to be positive.

6. DISCUSSION OF FINDINGS

Chapter 6 focuses on the investigative results for the dissertation. The discussion is based on the regression analysis and event study results presented in the previous chapter. There are three sections in this chapter. The first section of 6.1 discusses the post-merger performance in the short-term and its connection to the relative firm size of combining firms in M&A deals. Relating the analysis in the previous chapter, the arguments in Chapter 3 are also to be discussed. The second section of 6.2 discusses the post-merger performance in the long-term and its connection to the relative firm size of combining firms in M&A deals. The summary of the chapter as a whole and a brief conclusion will be presented in the last section, 6.3.

6.1 Post-merger Performance and Relative Size of Combining Firms in the Short-run

Being discussed in Chapter 3, there are two issues for post-merger performance to be investigated in the short-term of first quarter after mergers. The first issue is the argument of relatively negative performance in the short-term, seeing if the probable negative performance caused by the anarchical condition in their first quarters after mergers exists in those newly combined firms. Through the event study analysis for the entire samples of this dissertation in section 5.1, it showed significantly negative merger impact on performance as the measures of stock returns, ROA, and ROE. Therefore, this argument was successfully proved.

The second issue for short-run post-merger performance is to investigate how different relative sizes of combining firms influence the short-run performance. In section 3.3.2, it was argued that underperformance should be greater when the target

is relatively large. The investigation for this issue was done by two analysis methods of event studies and regression analysis.

After conducting event studies for four quartile groups, the results show that only percentage changes in ROE is corresponded to the argument; though not significantly. The percentage change in ROE got more negative with increasing the absolute size of the acquiring companies. In other words, the larger the size of the acquiring companies, the more the shareholders of the newly merged company would lose in the first quarter after mergers. As for the relative size viewpoints, the percentage change in ROE gets more negative when the size difference between combining companies get larger. This means the larger the size gap between the two companies, the shareholders lose more in the first quarter after mergers.

In the multivariate regression analysis, there were two significant results found, where percentage change for stock returns in the first quarter after mergers are positively related to the absolute size of the acquiring firms and the relative sizes of the combining firms. In other words, the larger the size of an acquiring company, and, the larger the size gap between the combining firms, the more abnormal share returns the shareholders of this newly combined firm would earn. The results are different from the original argument, but it might be explained by these two viewpoints: First, when the acquiring companies are larger, investors would expect more experiences and abilities to deal with the merger events because larger companies are usually more historical and with more various resources. Second, investors would expect more probable economies of scale, economies of scope, or growth opportunities for targets with larger sizes, because if a target is too small, the aims and goals of the merger might be limitedly achieved. It might be due to the more expectation for the larger

target, so that the stock returns increase comparing to the pre-merger stages.

In addition to the regression analysis for percentage change for stock returns, the same investigation was done for ROA and ROE as well. There is no significant association found between relative size and percentage change for operating performance. The results can be explained that in the short-term, the stock price, as the market assessment, is the better indicator for measuring post-merger performance. However, it is still worth mentioned that the beta of relative sizes in the regression for ROE was found negative, which was roughly corresponded to the arguments in chapter 3. It then can be inferred that though investors have higher expectation for larger targets, M&A deals with smaller targets actually had better return on equities in the short-term after mergers.

6.2 Post-merger Performance in the Long-run and Relative Size of Combining Firms

Similar to the discussion in the short-term post-merger performance, the investigation in the long-term up to five years broke into two parts. The first part was to investigate the overall post-merger performance in the long-term; the second part was to divide the whole sample deals into four even quartile groups and see whether various level of relative size of combining firms is a function to post-merger performance in the long-term.

After conducting event study analysis, the results of findings are to be discussed here. The average abnormal returns of shares for the whole samples showed significantly negative in all post-event periods after mergers. The results are corresponded to most previous studies as discussed in chapter 2. The managerial meaning of the results is

that after mergers, the shareholders of the newly combined companies had worse share returns comparing to the pre-merger periods. For the average excess operating performance of AEROA and AEROE, the whole sample studies showed significantly negative for the first three years after mergers. From the fourth year after mergers, excess operating performance for ROA and ROE showed no significantly different from zero. Moreover, AEROA and AEROE become less negative as years went by. The results for operating performance showed that for the early years after mergers, the operating performance of the newly combined companies were worse than which of the pre-merger stages. However, the overall operating performance was getting better in the long-run. Therefore, it can be proved that after a period of integration, the operating performance of the combined firms would improve.

After analyzing the whole sample deals, the event study analysis was then extending to the investigation of four even quartile groups. The abnormal returns of shares were significantly negative for most groups except the first quartile group in the third to the fifth years after mergers. The managerial meaning of this result could be explained by that the share returns for the shareholders of the merged firms with relatively smaller targets were not much different from the pre-merger periods after the third year since mergers, while shareholders for the rest groups experienced significantly less share returns after mergers. In addition, because most cumulated abnormal share returns for the whole samples are negative, it can be inferred that shareholders of most merged firms undergo continuous loss up to five years after mergers.

For the post-merger operating performance of AEROA and AEROE, it has been observed from the results of the previous chapter that for the first quartile group, both AEROA and AEROE were significantly negative throughout the post-event windows;

for the second and third quartile groups, the average excess operating performance did not always significantly differ from zero; for the fourth quartile group, the most excess operating performance was not significantly different from zero, and the most AEROA and AEROE for this group were positive after the second year after mergers. The explained results discussed above can be roughly concluded that as the relative size becomes bigger, i.e. the bigger the size of the target firms, the post-merger performance of the combined firms in the long-term turned out to be better. As discussed in the short-term performance, this phenomenon might be due to the reason of better resources of larger targets, where a larger firm might have more resources than a smaller firm, so that the merger aims of economies of scale and economies of scope can be more realized with more possibility. Therefore, when the merger benefits are realized, the operating performance would become relatively better.

6.3 Summary and Conclusion

This chapter connected the arguments and the analysis results in chapter 3 and chapter 5 respectively.

The short-term post-merger performance under both market assessments and operating performance assessments for the whole samples were significantly negative, and therefore, the arguments of negative performance after mergers were proved. In the first post-merger quarter, the percentage change for ROE turned worse when the sizes of the target firms become larger related to the acquiring firms, meaning that as the target sizes become bigger, the anarchical condition become worse. The regression results show that percentage change in stock returns in the short-run was significantly positively associated to the target sizes comparing to acquirers in M&A deals. In addition, the returns would become higher for the shareholders of those larger

acquiring companies. The results can be explained by the higher expectation of realizing M&A goals in the future from the investors when larger firms are combined. However, at the same time, though investors expect higher for larger targets, the post-merger performance for the first quarter were actually worse than pre-merger periods.

The long-term post-merger performance under both market assessments and operating performance assessments for the whole samples were significantly negative. The results were the same as most previous studies discussed in chapter 2. Besides, the performance turned to be better as post-merger time went by. Connecting the issue of long-term post-merger performance to the relative size of combining firms, the results showed that as the size of the target companies comparing to the acquirers become larger, the shareholders earned less comparing to which before mergers, but the operating performance become relatively better due to the higher possibility of realizing potential M&A benefits.

7. CONCLUSIONS AND RECOMMANDATION

Based on the results for the analyses and discussion above, this chapter draws conclusions and provides answers to the central question. Finally, at the end of this dissertation, recommendations for further investigation connected to this study are offered.

7.1 Conclusions

Mergers and acquisitions have been one of the most pronounced activities at the global level in the past two decades, but the overall empirical post-merger performance is still controversial. Researchers have been trying to explain various performances from different viewpoints. In this dissertation, the investigation aimed to analyze the performance in post-merger integration stages from the viewpoints of relative size of combining firms, discussing how various relative sizes between combining firms influence post-merger performance in the short-term and long-term. Hence the central question asked in this dissertation is:

How does relative firm size between target and acquiring companies influence post-merger performance?

To answer the question, the investigation had undergone two analysis methods of event studies and regression analysis in short-term and long-term separately. The sample M&A deals and the necessary financial information used in this dissertation were collected and filtered by two databases of SDC platinum and COMPUSTAT. The scope of this dissertation was limited in M&A deals announced between 2000 and 2001 in the U.S.A. where both combining companies were public. In total, 58 deals

were used in short-term event studies and regression analysis, while 74 deals were investigated in long-term event study analysis. The post-merger performance was assessed by using share returns as market performance and ROA and ROE as operating performance. When connecting the post-merger performance to relative sizes of combining firms in event study analysis, the whole samples were divided into four even quartile groups in both short-term and long-term. Overall, the conclusion of regression and event study analyses in this dissertation provide the answers to the central question of the dissertation. The conclusions are coordinated in the following:

For the short-term:

- ✓ The post-merger performance as the assessments of share returns, ROA, and ROE for the first post-merger quarter in the short-term is significantly negative, in other words, worse than which in the pre-merger periods. This conclusion is corresponded to the arguments of negative performance in the first quarter after mergers.

- ✓ Percentage changes in AEROE for the first quarter get worse as increasing the target firm sizes. This mean the operating performance gets worse when the target sizes get larger in the early post-merger stage.

- ✓ The regression result shows that the percentage changes in AAR for the first quarter is significantly positive to the absolute size of the acquiring firms, which means when the sizes of the acquiring firms increase, the shareholders of the newly combined firms relatively lose less in the first quarter after mergers.

- ✓ The regression result shows that the percentage changes in AAR for the first

quarter is significantly positive to the relative size of the combining firms, which means with the decreasing of the relative size gap of the combining firms, the shareholders of the newly combined firms relatively lose less in the first quarter after mergers.

For the long-term:

- ✓ The post-merger performance as the assessments of share returns, ROA, and ROE in the post-merger windows up to five years is significantly negative, in other words, worse than which in the pre-merger periods. The conclusion is corresponded to the conclusion of previous researchers.

- ✓ AAR for the newly combined companies with smaller targets is relatively better than the larger targets. Therefore, the shareholders of those firms with relatively smaller targets get less negative share returns compared to the rest firms with relatively larger targets. Because ACAR is associated with AAR, ACAR for those merged companies with relatively smaller targets is always less negative.

- ✓ Operating performance of AEROA and AEROA for the combined firms with large targets is not significantly different from zero, but still, it is observed that they are better than the smaller targets.

In short, based on the conclusions above, to response the title of this dissertation of 'does size matter?', the answer is: yes, it does matter in both short-term and long-term. The different performance for newly combined firms does exist according to different relative sizes of the original firms before mergers; the difference can be observed in

market returns and operating performance returns in the short-term and long-term.

7.2 Recommendations on Further Research

The investigation of this dissertation focused on analyzing how relative sizes between combining firms influence post-merger performance in the short-run and long-run. The results of the analysis showed the existing influence of relative size in post-merger performance. Based on what has been revealed in this dissertation, three additional ideas are provided for future research.

Firstly, the measuring model used in this dissertation is the mean-adjusted model, which aims to compare the performance of the combined firms to the average performance of the acquirers before mergers. Using this model is due to the data availability; therefore, it is recommended that different models can be used for more completed examinations in the future.

Secondly, because the investigating results might differ in accordance to scopes of time, geography, and industry, similar research can be done in different scopes, so that the existence of size impact can be ensured with more conclusive proofs.

Finally, because long-term post-merger performance in the investigation had been largely negative up to the fifth years after mergers, even longer post-event window might be used in further research to see until when the performance turn out to be positive.

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