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Merger Performance Analysis Based on Event Study Methodology

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Abstract: Mergers and acquisitions (M&A) can have both positive and negative impacts on companies. While they can enhance corporate value, they can also pose challenges. Regarding the impact of corporate mergers and acquisitions on performance, a variety of methods can be used to evaluate. These evaluation methods include but are not limited to: event study method, financial indicator method, economic value added method, balanced scorecard, etc. These methods evaluate corporate performance from different perspectives and can more comprehensively reflect performance changes before and after corporate mergers and acquisitions. The market model mainly analyzes the performance of a company from the perspective of market investors. On the one hand, the value of the company can be judged through changes in stock prices, and on the other hand, the impact of specific events on the company's performance can be analyzed through excess returns. To calculate the company's excess returns, the event study method can be used. This article takes the first announcement date of Company C's merger with Company S as the base date of the event, and then selects the base date and the days before and after it as the window period. By regressing the data in the estimation period, we calculate the excess returns obtained during the period of the merger and acquisition of the companies under study. By analyzing the excess returns, we can see whether the event has had a positive impact on the company's performance. This paper utilizes event study methodology to calculate the abnormal return and cumulative abnormal return of Company C’s acquisition of Company S, revealing a short-term positive impact on the market value of Company C. Based on this finding, the paper proposes relevant recommendations.

1. Introduction

Performance can be seen as the process by which an activity is run, or it can be seen as the result achieved by the activity. Performance can be subdivided into two parts in management, one is individual performance and the other is organizational performance, and the performance of the enterprise to be studied belongs to the latter.

Enterprise performance is not a single entity, it is a comprehensive system that can be reflected from different aspects. Performance evaluation is mainly to set a goal for the enterprise, and then design a corresponding indicator evaluation system for the goal, analyze these indicators through specific methods, and quantitatively and qualitatively evaluate the company's operating results and financial status at a certain period evaluation. Performance evaluation can start from many aspects such as finance, value, and market. From a market perspective, a company's performance level is reflected in changes in its stock price and investors' attitudes. The market approach analyzes company performance mainly from the perspective of market investors. It assesses the value of a company by examining stock price fluctuations and analyzes the impact of specific events on company performance through abnormal returns. Event study methodology can be used to calculate a company’s abnormal returns.

Some scholars argue that mergers and acquisitions have a positive impact on corporate value. They used event study method to study the relevant mergers and acquisitions data from 1963 to 1984, and found that mergers and acquisitions can increase the stock value of enterprises, and successful mergers and acquisitions behavior can bring significant growth to the merger value of both parties (Bradley and Desai, 1988)[1]. Similar conclusions were drawn from studies on mergers and acquisitions events in the ethanol industry (Khanal, 2014)[2]. A survey of 1596 mergers and acquisitions transactions completed in the US market between 2009 and 2013 found that mergers and acquisitions significantly provided positive cumulative abnormal returns and value creation for the acquirer (Teti, 2017)[3]. However, other scholars have reached different conclusions. After conducting an event study of mergers and acquisitions in the European financial industry between 1998 and 2002, they found that acquirers did not experience significant abnormal returns after the merger (Campa and Hernando, 2006)[4].Some scholars used 87 mergers and acquisitions transactions conducted in the French financial and real estate industries between 2008 and 2012 as a sample to test financial performance by calculating cumulative abnormal returns, buy and hold abnormal returns, and Jensen measures. They found that the long-term abnormal returns of acquiring companies were negative (Boubaker, 2020)[5]. Through testing a sample of 100 mergers that occurred in India from 1998 to 2008, the study found that the post merger profitability of the acquiring companies significantly decreased compared to their pre-merger profitability(Saini, 2015)[6].Based on data set consists of 213 observations of 157 OMA events that occurred between 1994 and 2009, using share market returns from the Shanghai, Shenzhen, Hong Kong, China and US markets. On the basis of an analysis using both aggregated and disaggregated samples, and of daily and cumulative abnormal returns, scholar find consistent evidence that Chinese OMAs have not lowered the wealth of shareholders of Chinese acquiring firms(Gu L, 2013)[7].By evaluating a sample of 15 firms in India that have experienced cross-border mergers and acquisitions from 2005 to 2008, research finds that there has been no significant change in the financial position of these companies in the post-merger period as compared with the pre-merger period. Finally, results of the event window reveal that the shareholders of acquirer firms have witnessed a meagre positive cumulative average abnormal return during the post-merger announcement period (Singla, 2012)[8].

2. Theory of Event Study Methodology

In a rational market, major events affecting a company can lead to changes in its stock returns. Event study methodology can calculate whether a mergers and acquisitions event has brought abnormal returns to investors, helping to understand the internal link between stock price fluctuations and the occurrence of the event.

Event study methodology examines the change in a company’s stock price after an event occurs, checking for abnormal returns to determine the extent of the event’s impact on the stock price. This method allows for an intuitive observation of investor sentiment toward the disclosure announcement before and after the event. The calculation process of the event study method is as follows: First, we need to define the event and window period. Events mainly refer to a major event of the company, including but not limited to: corporate merger and acquisition announcement date, equity incentive announcement date, asset sale announcement date, etc. The event window period is a period of time extended before and after the event occurs, which can be several trading days before or after, or a longer period of time. In addition, the estimation period also needs to be determined. This period is mainly used to calculate the normal rate of return. Generally speaking, the estimation period and the window period cannot overlap. Second, prepare relevant data. After determining the event, window period and estimation period, you need to prepare data for the subsequent event study. Generally, two sets of data need to be prepared, namely the daily rate of return of the target company and the market portfolio. The time selection needs to match the window period and estimation period. Then, we need to calculate the normal return and the excess return. The normal rate of return is the rate of return that the company can obtain based on daily production and operations without any special matters, also known as the expected rate of return. In layman's terms, excess return is the return that exceeds normal conditions. Excess returns can usually be calculated using market models, but in special cases market adjustment models and constant mean return models can also be used. To understand the impact of events on stock prices over time, the cumulative excess return can be calculated. Finally, the obtained data results should be tested for significance to see if they are statistically different from zero. The T test is generally used to determine whether the event has a significant impact on the stock price.

This article uses this method to calculate the excess returns of Company C in the 30 days before and after the announcement date. By observing the changes in Company C’s accumulated excess returns, we can intuitively see the attitude of market investors towards this merger and acquisition event. The greater the excess returns, the better. The more optimistic investors are about the company, and vice versa, it means that investors have less confidence in the company's development.

3. M&A Performance Analysis of Company C

3.1 Basic situation of mergers and acquisitions

Company C primarily engages in the research, development, production, and sales of hydraulic components and parts, with major products including central swivel joints and tensioning devices. The target company, Company S, primarily engages in the research, development, production, and sales of photovoltaic swivel reducers. In 2023, Company C issued shares and paid cash to acquire 70% of the equity of Company S.

3.2 Purpose of Transaction

In 2021, Company C launched the research and development project of major new products such as rotary reducers for photovoltaic tracking brackets and rotary reducers for construction machinery. These projects utilize the technical accumulation of product hydraulic rotary joints, and the relevant products are still in the customer verification period.

The target company, S Company, is one of the earlier companies to engage in the business of photovoltaic reversing reducers. It has a first-mover advantage in terms of research and development investment, production and manufacturing, and market expansion. The main customers of the company are well-known photovoltaic enterprises at home and abroad, and five out of the top ten global bracket factories have cooperated with the target company.

Through this transaction, Company C can further expand the R&D, production and sales of photovoltaic rotary reducers, construction machinery rotary reducers and other products with the help of the relevant dominant position and production capacity of the target company in the field of photovoltaic rotary reducers; The target company can further expand the sales of construction machinery slewing reducer products with the help of Company C's dominant position in this field.

3.3 Impact of the M&A on Company Performance

3.3.1 Defining the Event

The first announcement date of Company C’s acquisition of Company S was January 20, 2023. This date should usually be taken as the benchmark date. To better observe the impact of the mergers and acquisitions event on the company, this paper selects (-30, 30) as the window period T. Additionally, the 30 trading days before the observation period are defined as the pre-estimation period.

3.3.2 Calculating Expected Return

The individual stock return (dependent variable) chosen in this paper is the individual stock return of Company C considering cash dividends reinvestment, while the market return (independent variable) is the daily market return of the combined AB market considering cash dividends reinvestment. The formula is as follows:

$$R_{it}=\alpha_i+\beta_i R_{mt}+\varepsilon_{it}\ ,\quad E(\varepsilon_{it})=0$$

Where Rit represents the individual stock daily return, and Rmt represents the market daily return.

Performing regression on the two sets of data for the 30 trading days of the estimation period (-60, -31) yields values of α_i and β_i as -0.0010083351 and 1.033481452, respectively. Therefore, the expected return formula for Company C within the window period is:

$$ER_{it}=-0.0010083351+1.033481452R_{mt}$$

3.3.3 Calculating Abnormal Return

The formula for the abnormal return of stock i on day t is:

$$AR_{it}=R_{it}-(\alpha_i+\beta_i R_{mt})$$

Substituting the values of α_i and β_i into the formula, the abnormal return of Company C in the window period T (-30, 30) is:

$$AR_{it}=R_{it}-(-0.0010083351+1.033481452R_{mt})$$

3.3.4 Calculating Cumulative Abnormal Return

Abnormal return can clearly reflect the extent to which an event influences the stock price each day within the window period. However, to understand the event’s lasting influence, it’s necessary to introduce cumulative abnormal return. The formula for this is as follows:

$$CAR=\sum AR_i$$

Through calculation, the specific abnormal return AR and cumulative abnormal return CAR for Company C within the window period are as follows:

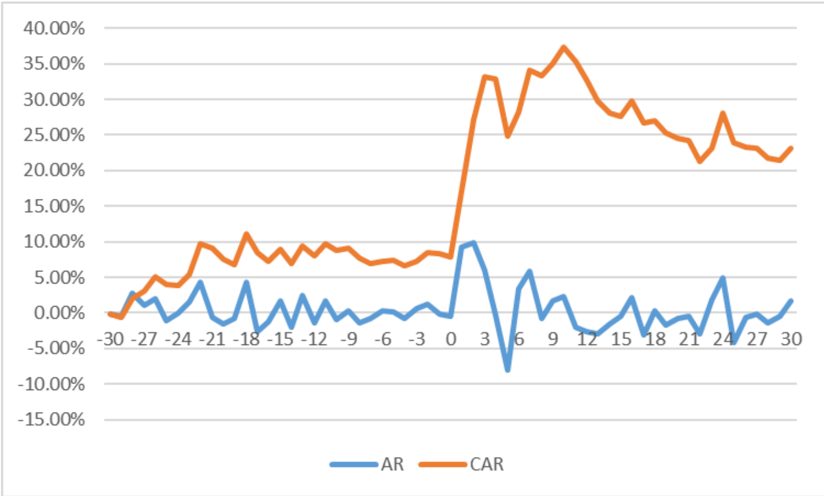

Figure 1: Trend of cumulative abnormal return for Company C

Figure1 shows the trend of Company C's cumulative excess returns. From the figure, it can be intuitively found that the merger and acquisition of Company C has brought a positive market effect to the company. From the perspective of abnormal return fluctuations, investors responded well to the mergers and acquisitions, with a significant increase in abnormal returns in the days after the benchmark date, indicating that investors are optimistic about the mergers and acquisitions. The cumulative abnormal return within the window period saw a significant increase after the benchmark date, followed by a slight decline, suggesting a relatively short duration of investor enthusiasm for the mergers and acquisitions. Although the mergers and acquisitions brought positive returns to the company, it did not lead to sustained returns.

4. Research Insights

Mergers and acquisitions can have both positive and negative impacts on companies. Some mergers and acquisitions gain investor favor and enhance company market value, while others are viewed unfavorably by investors and detract from company market value. Company C's acquisition of Company S is a typical case in mergers and acquisitions. The analysis of the merger process and results can provide some reference for other corporate mergers and acquisitions in the future.

4.1 Enterprises should pay attention to research work before mergers and acquisitions

Mergers and acquisitions are a relatively large business activity for enterprises, and the quality of mergers and acquisitions has a huge impact on the development of enterprises. Some companies can obtain considerable positive returns after mergers and acquisitions, and can achieve rapid increases in corporate value; while some companies have experienced worse performance after mergers and acquisitions, or evendeclined from then on. Therefore, companies must conduct sufficient research beforehand as to whether they should implement mergers and acquisitions for expansion. Before corporate mergers and acquisitions, you first need to conduct in-depth research on yourself, clarify your merger and acquisition purposes, and understand your own strengths and weaknesses. Then we need to conduct research on the target company to see the company's strength and corporate value, and determine whether the target company can achieve business synergy with the company. Finally, companies should also investigate the current social environment. Whether mergers and acquisitions can proceed smoothly is also affected by national political, economic, legal and other factors. Only when the right time, location, people and people are all at the same time, mergers and acquisitions can greatly improve corporate performance.

4.2 Enterprises should actively respond to post-merger integration work

There are two types of failure in corporate mergers and acquisitions, one is failure beforehand and the other is failure afterward. To deal with failure beforehand, what we need to do is to conduct sufficient research in advance, and to avoid failure afterward, we need to strengthen post-merger integration work. Problems such as productivity decline, management conflicts, and loss of key personnel are likely to occur within a period of time after the merger and acquisition. These problems arise because the integration work after the merger and acquisition was not done well. Integration work is a large and complex task, which not only requires overall control of the enterprise, but also requires full coordination of all aspects of the enterprise's operations, management, and personnel. Only by solving these complex problems one by one and improving them as a whole can we create value for the enterprise, bring positive mergers and acquisitions performance, and avoid post-mergers and acquisitions failures.

References

[1] Bradley M, Desai A, Kim E H. Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms[J]. Journal of financial Economics, 1988, 21(1): 3-40.

[2] Khanal A R, Mishra A K, Mottaleb K A. Impact of mergers and acquisitions on stock prices: The US ethanol-based biofuel industry [J]. Biomass and bioenergy, 2014(61): 138-145.

[3] Teti E, Dell'Acqua A, Etro L, et al. The impact of board independency, CEO duality and CEO fixed compensation on M&A performance[J]. Corporate Governance: The international journal of business in society, 2017, 17(5): 947-971.

[4] Campa J M, Hernando I. M&As performance in the European financial industry[J]. Journal of Banking & Finance, 2006, 30(12): 3367-3392.

[5] Boubaker Z F, Naoui K .A post-merger performance of acquiring firms: evidence from French stock market[J]. International Journal of Entrepreneurship and Small Business, 2020, 39(1-2)

[6] Saini A, Singla R .Impact of Mergers on Corporate Performance in India[J].Asian Journal of Research in Business Economics and Management, 2015, 5(3):350-360.

[7] Gu L, Reed W .Chinese overseas M&A performance and the Go Global policy1[J].Economics of Transition, 2013, 21(1): 157-192.

[8] Singla R, Saini A, Sharma R .Cross-border Mergers and Acquisitions: A Performance Evaluation of Indian Acquiring Companies [J]. Asia Pacific Journal of Management Research and Innovation, 2012, 8(2):127-132.