

ERASMUS UNIVERSITY ROTTERDAM

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The Wealth Effects of Mergers and Acquisitions in the United States of America
for the Target Companies

Bachelor Thesis [International Bachelor Economics and Business Economics]

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Abstract

Mergers and acquisitions (M&A) lie at the heart of the strategies employed by many companies and are often used as tools to overcome difficulties in the market. 2007 is a year that marks a place in economics globally and U.S. has its role there. Consequently, this paper investigates the wealth effects of M&A announcements for target firms in the U.S. in 2007. During that time period, the cumulative abnormal returns generated were around 13-14% for the targets after the M&A announcements. To a large extent, these returns were affected by firm specific factors like total assets, book value per share, gross profit, operating expenses and market value which were found to have empirically significant influence.

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1. Introduction

2007 is a year that marks a place in global economics and finance. In the United States of America (U.S.) the year of 2007 symbolizes various financial exposures. It is a year that involves multiple actions and catalysts for the global financial crisis that occurred in 2008. During the time period there was a lot of economic instability and distrust between different financial institutions. There were already many warnings present in the U.S. economy for the upcoming crisis and the purpose of this research is to find out their effect on the business sector. Therefore, this study investigates the value creation of merger and acquisitions (M&A) announcements in this specific year for target companies. Specifically, the aim of the research is to investigate the reaction of stock markets to companies' M&A announcements in 2007 in the U.S.

When looking at the financial and corporate environment today financial transactions lie at the heart of the dynamics in the business sector. A popular type of transaction that companies often undertake is the deal of merger and acquisitions (M&A). Over 20 years the value of M&A transactions has globally grown with a very fast pace: from 777 billion U.S. dollars in 1988 to 3.9 trillion U.S. dollars in 2018 (Statista, 2019). This is more than a 400% increase. The vast size of the growth implies that companies find it favorable to merge. The ten biggest industries that had the highest value and number of M&A deals in the period of 1085-2016 are: mining, professional services, financials, food, software, building/construction, oil and gas, banks, transportation and machinery (United States Census Bureau, 2018). Moreover, the literature states that M&As are able to create fundamental value both for the economy as a whole and its investors (McKinsey & Company Inc., Koller, Goedhart, & Wessels, 2015). Another significant advantage of M&A is the reduced competition as together the two companies are able to get a greater market share in the industry and in combination of their allocation of resources to also operate more efficiently.

Furthermore, empirical research shows that the macroenvironment has an influence on the M&A transactions (Reid & Battinelli, 2013). In the work of Batinelli (2013) it was found out that the global financial crisis in 2008 had a strong effect on the activity of M&A deals, specifically in the sector of real estate. As the economy was in turmoil the M&A activity was found quite volatile and influential by various economic factors. On the other hand, the paper of Benou and Madura (2005) depicts that M&A deals are very firm-specific and are actually not that much influenced by

the macroeconomic environment, especially in highly technologically advanced industries. The paper discusses further that the sector the company operates in has a substantial effect on the M&A activity. For instance, the technological sector experiences higher growth than other business areas and if the company is not capable of internally developing and keeping up with the pace of the market they could be easily taken over.

All in all, as the literature states that M&A deal can create value and have great benefits but could also be affected by both macro and firm specific factors in this research I will investigate whether in 2007 the M&A activity, as measured by its announcements, was value creating for target firms or not. Because of the volatile economic environment in this time period it may be that the wealth creation could have been negative as opposed to the general notion that M&As create value for target firms. This thesis aims to shed light on this issue. Hence, the research question is the following:

What are the wealth effects of M&A announcements for target firms in the U.S. in 2007 and what are the main factors that can explain these wealth effects?

In order to answer this question, the research paper will be divided in different parts. In the following section, I will discuss about the empirical research and formulation of hypotheses. Next, in the section of *Data and Methodology*, I will elaborate on the process of data extraction and the methodological approaches taken to test the hypotheses. This will be followed by a section of *Main Results* where the main findings will be analyzed. Lastly, in *Conclusion* I will answer the research question, discuss about the limitations and give suggestions for further research.

2. Related Literature

In this section, mergers and acquisitions will be discussed in more depth. Specifically, I will refer to the existing literature and will also elaborate on the incentives behind each M&A deal.

Interestingly, the United States has the longest history of mergers (Sudarsanam, 2010). Even though M&A deals have existed for a long time, gained popularity and experienced huge growth over the years there are still areas that remain debatable and questionable for many researchers.

Companies perform mergers and acquisitions because of strategic and financial objectives (Sudarsanam, 2010). However, research also indicates that actually less than 50% of the mergers and acquisitions are successful (Calipha, Tarba, & Brock, 2010). Hence, the aim of this section is to find out a more complete and profound notion behind M&As.

2.1. Mergers and acquisitions

Mergers and acquisition (M&A) is a financial transaction where simply said two companies join together into one. This can be done either via combining (merging) their business units together into one single company or when one enterprise takes over another (acquisition). After the M&A activity two different companies will have the same ownership, which in accounting terms also refers to consolidation. There are different ways of perceiving M&As.

Through the eyes of two specialists', financial and industrial, M&As can be perceived in two different ways (Tichy, 2001). Financial specialists have a neoclassical view since they see M&A deal as a way of allocating reserve resources the most efficient way. On the other hand, industrial specialists have a more skeptical view. The former states that M&A deal is not the most efficient action because when studying the results and data from balance sheets they can tell that M&A activity is not profitable to neither target or acquiring firms (Tichy, 2001). Therefore, there is clearly a controversy between the two thoughts of schools and the usefulness of a M&A deal. Furthermore, in the research, Tichy (2001) finds out that there is no direct and automatic relationship between M&A and the company's productivity which would aid in enhancing the corporate's wealth. Instead, there are specific conditions that have to be met and can advocate the suitable growing environment for the companies. Nonetheless, the researcher found out that there is a small proportion of M&A deals that increase the wealth and productivity of a company - however for the majority it is still found to be an inefficient action to take. Tichy (2001) also discusses that countries create strict laws and regulations on mergers to tackle anti competitiveness which makes it even harder for the joining companies to profit from the deal (Tichy, 2001). Hence, M&A deal could lead to desirable outcomes but there are various factors that can aid or prevent it such as company-specific conditions or the governmental laws on merger activity.

In regard to the macroeconomic environment, Sudarsanam (2010) discusses in his work about the wave patterns of M&A activity and states that when economy is booming the number of firms acquired and the deal value are also at its peak. Similarly, when the economy is in turmoil the deal values should be low and not increasing relative to the previous years. These findings are supported by the data when looking at the value of M&A deals worldwide. It is depicted that the deal value increased from 2002 till 2007 from 1,242 billion U.S. dollars to 4,920 billion U.S. dollars. Whereas, from 2007 onwards and during the financial crisis of 2008 and the following years the deal value decreased till 2013 when it started slowly showing an upward trend again (Statista, 2019).

2.2. The Phases and Motives of Mergers and Acquisitions

Along with manifold characteristics, M&A also comes with success factors, phases and motives that are both internal as well as external and domestic as well as international.

King, Dalton, Daily and Covin (2003) found out that there are numerous variables that are capable of affecting the successfulness of a merger and acquisition activity. The latter includes factors such as payment method and level of relatedness between the acquiring and target company, but their effect is not found empirically significant and consequently many researches face complex challenges. Similarly, in the work of Mackor (2018) the researcher did not find any significant evidence that would support the positive relationship between higher degree of relatedness and the post M&A shareholder value. Whereas, interestingly for instance the size of the company during M&A announcement is found to be one of the key drivers in wealth creation (Fich, Officer, & Nguyen, 2018). Consequently, concrete success factors that have a positive relationship and are able to generate significant shareholder value are difficult to determine and still remain under the question.

Likewise, with the success factors, the phases of M&A still remain under discussion as well. There are multiple researches made to investigate the phases of the transaction. Some economists have divided the phases into two, whereas others state that M&A consists of four or seven phases. According to the most recent research the phases of M&A can be divided into following: strategic planning, candidate screening, due diligence, deal execution, and the ultimate integration phase (Parenteau & Weston, 2003).

Furthermore, strategy is an important primary motive and a first step in the execution of M&A. Based on a global M&A survey which was carried out in 2006 by Accenture and the Economist Intelligence Unit it was found out that corporations use M&A as a strategy to enhance future growth and create sustainable prospects. As a result of this, enterprises are aggressively and actively engaging in M&A activities in order to buy compatible enterprises that would aid them in creating value (Gomes, Tarba, & Weber, 2011). M&A is a strategy that enables companies to enter new markets, face competition, obtain better resources such as technology, geographic location and people. Not only is M&A able to give a competitive advantage but also in terms of financial management it has a risk-reducing effect in the business portfolios (Calipha, Tarba, & Brock, 2010).

Nonetheless, as M&A is found to be a common corporation strategy there is also evidence for high failure rates. Mirvis and Marks (1992) thought that one reason of M&A failures could be the attention the management decide to put their focus on. Evidently, the management puts a lot of attention to the financial side of the M&A deal but not that much thought into organizational culture and psychological factors. They found out that for the company in order to still stay competitive in the long run they should pay attention to all the sides of the business: legal, financial and behavioral. Hence, in this paper I chose to test the year of 2007 and see whether the financial side reportedly plays as great role as it should.

Additionally, Seth, Song and Pettit (2002) state that an important aspect that determines whether the M&A deal is successful or not is the understanding of the motives. As briefly mentioned above the primary reason or motive for the companies in engaging at M&A deals is the strategy, more specifically the competitive advantage. The latter is achieved through the synergies of combining two or more companies and their business units together. The other important motives are materialistic self-interest and power. There are also many indicators of success that are related to motives that involve financial management, factors like whether management was involved in the process or not, organizational structure and size etc. (Calipha, Tarba, & Brock, 2010).

2.3. Value Creation and Wealth Effects

Clearly as seen from the related literature above there are multiple benefits that come along with M&As. Ultimately, all the optimal enterprises are profit-maximisers and they undertake strategic decisions in order to create value. As a matter of fact, corporate M&A activity creates positive gains for both the target and acquiring firms (Jensen & Ruback, 1983).

A useful concept when analyzing the wealth effects of M&A activity on the stock prices of the target and bidder firms around the M&A announcement date is “event study”. Event studies enable to investigate the economic effect of M&A by looking at the abnormal stock price changes around the date of M&A announcement. Abnormal stock price changes are measured as a difference between the actual stock returns and what was expected (Jensen & Ruback, 1983). It used to be the case that economist would have used the effective date of merger, date when the target shareholders give their final approval, as an event date in the event studies. However, the expected price effects could already be found before or during the first M&A announcement. Hence, since the announcement date occurs at a random time before the effective date, it is harder to capture the which changes in the stock prices were caused directly by the event and which ones were not. Due to the complexity, it is therefore more optimal to analyze the abnormal returns around the time when the first M&A announcement is done – this way it can be certain that the changes in security prices are caused by the event (Dodd & Ruback, 1977). The same approach will also be followed in this research.

Furthermore, in the study of Jensen and Ruback (1983), the researchers found out that the estimated positive abnormal returns for targets of successful takeover in 30 to 60 trading days range from 16.9% to 34.1% with the weighted average of abnormal returns around 29.1%. For the successful mergers of targets, they found that the estimated positive abnormal returns in the period immediately following the merger announcement resulted in a range of 6.2% to 13.4% with the weighted average of abnormal return of 7.7%. Whereas, a weighted average return for one month was 15.9%, which represents almost twice the size of a two-day abnormal returns. This means that the majority of the abnormal returns that are associated with the M&A announcements happen very closely to the days prior to the public announcement (Jensen & Ruback, 1983). Eventually they found out that successful tender and merger offers can result in empirically significant

positive abnormal returns during the announcement day of the M&A deal as well as throughout the completion of the M&A. However, targets that are unsuccessful can still earn significant positive abnormal returns on the event announcement but only till the failure of the M&A deal becomes known (Jensen & Ruback, 1983).

In comparison, the bidding companies of a successful tenders realize significantly positive abnormal returns in the range from 2.4% to 6.7% with a weighted average of 3.8%. There is a significant percentage increase for the bidders in equity value, but it is substantially lower from the returns of 29.1% which the successful targets experience. Furthermore, in regards of mergers it is more difficult to assess the significance and the stock returns of bidders. It is actually suggested that the abnormal returns for the bidders during merger announcements are close to being zero. Different economists have contrasting results, but they all fall to a range of values close to 0. Dodd (1980) found out in his research that the significant abnormal returns prior to and after the public merger announcement were -1.09% for the 60 successful bidding companies investigated. With the same time frame of two-day period, Asquith (1983) and Eckbo (1983) found empirically insignificant results which however showed positive abnormal returns. Therefore, there are mixed results in terms of abnormal returns for the bidders during a merger announcement. The former is difficult to estimate since security price changes also portray the changes in expectations, and it can be the case that merger announcement has no effect as it was already anticipated by the market. Moreover, targets are acquired once at most while the bidders can more actively take part in multiple M&A offers. Additionally, there are quite many measurement problems when it comes down to bidders. Many researches show that there are systematic reductions in stock prices for the bidding firms in the year after the M&A announcement (Jensen & Ruback, 1983). However, these negative abnormal returns are not consistent with the market efficiency and imply that security price changes during the takeovers may overestimate the future efficiency gains from mergers. Hence, as the bidding side of the M&A deal is more complex and difficult to measure as well as analyze this research will focus only on the target companies.

2.4. Research Question and hypotheses

Based on the empirical evidence and theory on mergers and acquisitions, which touched upon the United States of America and the year of 2007, the following research question will be investigated:

What are the wealth effects of M&A announcements for target firms in the U.S. in 2007 and what are the main factors that can explain these wealth effects?

Market capitalization has an important relation to stock markets. More specifically, market capitalization, which is the market value of a publicly traded company, is calculated by multiplying the number of outstanding shares and the share price of the company. From the section 2.3. *Value Creation and Wealth Effects*, the academic literature displays that the security price changes experience abnormal returns, indicating that the stock prices go up after the public M&A announcements. There is also an empirical evidence which shows that on average there is an increase in shareholder wealth for target firms after a M&A announcement (Jensen & Ruback, 1983). Ergo, the following hypothesis was formulated.

H1: The wealth effects of M&A are positive for the shareholders.

Furthermore, as discussed in *Sections 2.1.-2.2.* above, there are multiple factors that affect stock returns during the M&A announcement. Some of them are internal to the company and some are external, yet a universal conclusion about which variables specifically have an impact on the returns of shareholders still remains debatable. Consequently, in this research I decided to test both the internal and external variables of interests. With an inspiration taken from the work of Mackor (2018) and the findings of empirical studies, the following hypothesis was formulated:

H2: Factors that significantly influence wealth effects from M&A are size, book value, geographic region, common shares outstanding, operating costs, operating income, market value, time and industry.

3. Data and Methodology

3.1. Databases

The data for this research was collected from three different databases: SDC Platinum Mergers and Acquisitions, the Center of Research in Security Prices (CRSP) and Compustat North America daily.

Firstly, the event dates for the merger and acquisition announcements in the United States for the year 2007 were taken from SDC Platinum database via Thomson Financial Securities Data. The event dates of the companies were obtained using the following criteria:

- From dates of 01.01.2007 till 31.12.2007 to investigate a time period just prior to the financial crisis in 2008.
- Corporate transactions in the United States of America as financial crisis started there.
- U.S. Target companies to keep the country in the sample constant.
- All industry sectors to see whether an industry plays significant role in value creation.
- Public and private companies to get as extensive overview of the M&A activities as possible.
- Transaction that involves more than 5% of the ownership to serve as a benchmark for significant results.
- Transaction valued more than \$1 million (after year of 1992) to serve as a benchmark for significant results.

Following the criteria above, this extraction of data gave 289 M&A announcements involving 181 companies.

Secondly, the daily stock returns for these 181 U.S. were obtained from the CRSP database via the Wharton Research Data Services (WRDS) platform. More specifically, from the database the daily stock returns as holding periods returns without dividends were taken. For the market return the daily returns of the Standard & Poor's 500 Composite Index as of the end of trading day were taken.

Following the first and second steps discussed above event study analysis was conducted. A description about what an event study analysis means can be found in *Section 2.3. Value Creation and Wealth Effects*.

Thirdly, in order to run multiple regression analysis control variables were extracted from the Compustat North America fundamental annuals database via the platform of WRDS. Unfortunately, as Compustat database includes only the published data from annual reports, I was able to eventually obtain the control variables for 169 companies only.

The following variables were obtained from Compustat:

- The state of U.S.
- SIC code (industry code)
- Total assets of the company
- Book value per share
- Common shares outstanding
- Gross profit
- Net income
- Operating expenses
- Market value
- Merger completion

A more detailed explanation of the chosen control variables is described below.

3.1.2. Control variables

State

The state of U.S. as an indicator for the location of the target company. In United States of America there are 50 states, however in this sample the selected target companies operate in only 35 states.¹

¹ AL (Alabama), AZ (Arizona), CA (California), CO (Colorado), CT (Connecticut), FL (Florida), GA (Georgia), HI (Hawaii), IA (Idaho), IL (Illinois), IN (Indiana), KY (Kentucky), MA (Massachusetts), MD(Maryland), MI (Michigan), MN (Minnesota), MO (Missouri), NC (North Carolina), NJ (New Jersey), NV (Nevada), NY (New York), OH (Ohio), OK (Oklahoma), OR (Oregon), PA (Pennsylvania), RI (Rhode Island), SC (South Carolina), TN (Tennessee), TX (Texas), UT (Utah), VT (Vermont), WA (Washington) and WI (Wisconsin).

SIC Code

The Standard Industrial Classification (SIC) code to illustrate in which industry the target company is operating in. The SIC codes itself per industry have a unique 4-digit code but can also be divided into bigger divisions. In this research the first two digits of the industry code were used. The first digit represents the industrial division of the company (A-G) and the second digit shows in which category the company belongs within the division. A better overview of the company classifications can be found in section *4.1. Descriptive Statistics*. A more detailed overview of the divisions and categories for the SIC codes can be found in *Appendix 1*.

Total Assets

Total assets are used as a proxy for the company size. As found out earlier in the empirical studies of Fich, Officer and Nguyen (2018) size plays an important role in the value creation of M&A activity total assets were used to represent the company size, similarly like done in the research of Mackor (2018). This control variable represents the total assets of a company at the most recent point in time. If the company does not report a useable amount, this data item was left blank. In the regression, the total assets were defined as $\ln(1 + \text{total assets})$ in order to normalize the variable.

Book Value per Share

Book value per share is a proxy for the inside value of the company. The variable enables to see the internal value of the company as it contains information about the under- and overvaluation of the security's stock. As discussed earlier, the managerial decisions have an important role in corporation strategy, which ultimately affects the value creation for the company This control variable is based on the most recent fiscal year-end data of the company and calculated from the calendar year-end index data. In this research in order to normalize the variables for the regression, the book value per share is defined as $\ln(1 + \text{book value per share})$.

Common Shares Outstanding

As discussed earlier the market value of the company is calculated by multiplying the number of common shares outstanding with the share price. The number of shares outstanding has an effect on the relative growth in shareholder value when the total value of the company increases (Mackor,

2018). Consequently, as the research aims to find information about wealth effects, the number of common shares outstanding is included in the regression as a proxy for changes in company's value. This control variable is defined as the net number of all the common shares outstanding for the company at the end of fiscal year, excluding treasury shares and scrip (Wharton Research Data Services, 2019). The common shares of a company were excluded from the sample when the net shares were held by a consolidated subsidiary against the capital account.

Gross Profit

Gross profit can be used as a good proxy when it comes to the internal efficiency of the company. The former represents how well the company is able to utilize its labor and supplies in order to produce goods or perform services. As managerial decisions and organizational factors have a crucial role in the valuation process of the company, gross profit was included in the regression as a variable of interest (Mirvis & Marks, 1992). Since the sample consists of U.S. companies the gross profit is defined via the GAAP definition, which is $\text{gross profit} = \text{Sales/Turnover (net)} - \text{Cost of goods sold}$. Furthermore, in order to normalize the variable in the regression it was defined as $\text{gross profit} = \ln(1 + \text{gross profit})$.

Operating Income

Operating income is a proxy for the end outcome of the firm's core operations and its profitability. The former represents how well the company is able to operate its resources, which in turn is in correlation with the efficiency and free cash flows. Moreover, there is also a correlation between the operating income and the shareholder value, as ultimately the portion of the profit may be used to pay for the shareholders. Furthermore, the higher the profitability the better messages it sends about the performance of the company, which enhances the shareholder value even more.

This control variable is defined as the income of the fiscal period after subtracting expenses and losses from all revenues and gains. In order to normalize the variable in the regression it was defined as $\text{operating income} = \ln(1 + \text{operating income})$.

Operating expenses

Operating expenses is a proxy for the competitive advantage of the company. Operating expenses are costs that incur due to running of the business. Examples of operating expenses are for instance:

rent, insurance, equipment, marketing and etc. Operating costs are needed for the company to run its everyday operations and the aim of every profit maximizing company is to keep these costs as low as possible. A very important responsibility managers often have are to reduce operating costs without losing the quality of the goods/services of the firm. Once the quality or performance of the goods/services decreases the company is most likely to lose its competitive advantage in the market. Hence, operating costs are crucial but at the same time unavoidable for the business. In case of decreasing the former successfully the company is able to compete better with its competitors in the market but also increase its profitability. This control variable is defined as the total operating expenses of the fiscal period for the company. In order to normalize the variable in the regression it was defined as $\text{operating expenses} = \ln(1 + \text{operating expenses})$.

Market Value

Market value is a proxy for the outside value of the company for investors. As the wealth effects of the company are influenced by the market value it is important to investigate to their relationship with one another. This control variable is defined as the sum of all issue-level market values, including trading and non-trading issues. In case of a single-issue company, the market value is defined as the multiplication of the common shares outstanding by the month-end price that corresponds to the period end date. In order to normalize the variable in the regression it was defined as $\text{market value} = \ln(1 + \text{market value})$.

Merger Completion

Merger completion is a proxy for the successfulness of the M&A announcement. If after the announcement the merger between the companies took place the M&A deal can be considered successful and vice versa. This is a dummy variable that will take a value of 1 if the merger was completed later on and value of 0 if the merger was not completed.

3.2. Event Study Analysis

In order to test the hypotheses, an event study analysis was performed, which is also the main focus of this research. Event study helps to analyze the M&A announcement and its impact on the firm value. The former started in 1960s when the economists Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (1969) found empirical evidence and came up with a methodology to

investigate the price reaction of stocks to an official public announcement such as stock splits, mergers and acquisitions, share repurchases, seasoned equity offerings etc. (Sar, 2018). Consequently, as the abovementioned economists are the founders of the event study analysis their methodological approach and tools were also applied in this research. The following sections will discuss in more detail about the event and estimation windows, formulas and calculations used.

Cumulative Abnormal Returns

The aim of the event study is to see whether there are price effects around the event date, which refers to the announcement date of M&A. The analysis is done by calculating cumulative abnormal return (CAR) which is the difference between the expected and actual return of the stock. CAR is a powerful event study tool since when there is an event (i.e. M&A announcement) it is able to tell the effect of the announcement on the stock price and ultimately on the firm value.

The following market model will be used to calculate normal returns (Fama, Fisher, Jensen, & Roll, 1969):

$$E(R_{it}) = \alpha_i + \beta_i R_{Mit} + u_i ; \text{ where} \quad (1)$$

E(R_{it}) = the expected return of the security i on trading day t.

R_{Mit} = the observed stock return on the S&P 500 market index

β_i = the beta coefficient of the security i

α_i = the alpha idiosyncratic return of security i

u_i = the error term

For the control period the estimation window of 30 trading days was chosen with the time period of (t-60, t-30). Although literature suggests that the estimation window should be between 100 to 250 trading days, I had to reduce that as my dataset included only the events of year 2007 and with a narrow time frame the number of observations were cut drastically (Sar, 2018). Therefore, to preserve the largest number of observations a window of 30 trading days (t-60, t-30) is used.

Next, the abnormal returns were found. Abnormal returns are present when the returns of the control period in the estimation window are significantly different from the returns in the event window. The following equation was used to detect abnormal returns:

$$AR_{it} = R_{it} - R_{io}^* ; \text{where} \quad (2)$$

AR_{it} = the abnormal return of security i on day t

R_{it} = the observed return of security i on day t

$R_{io}^* = (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$ where the accents on top of alpha and beta represent the estimates.

Furthermore, as there is a lot of uncertainty involved with the future events that are affected by the certain public announcement the stock prices are usually very volatile during the period of the announcements. Therefore, due to the event date uncertainty, the occurred abnormal returns during the announcement will be summed up over the event window to a cumulative abnormal return (CAR) using the following formula:

$$CAR_i(T_1, T_2) = \sum_{t=T_1}^{T_2} \widehat{AR}_{it} ; \text{where} \quad (3)$$

$CAR_i(T_1, T_2)$ = cumulative abnormal returns of the sample in the event window (T_1, T_2)

It will be then tested whether this CAR significantly differs from zero and if it is the case then abnormal returns are present.

In addition, since in this research I will be investigating the M&A announcement effects on different event windows the cumulative average abnormal return (CAAR) will also be calculated. CAAR is a useful event study tool for understanding better the aggregate effect of normal returns, especially when the effect of the public announcement is not on the date of the event itself (Princeton University, 2003). The following formula for calculating CAAR was used:

$$CAAR_t = \text{average of } CAR_{it} \quad (4)$$

All in all, to test whether the CAR and CAAR are significantly different from zero and have an effect on the stock prices the following test for significance was run (Jong, 2007):

$$G = \sqrt{N} \frac{AAR_t}{s_t} \sim t_{N-1}; \text{ where} \quad (5)$$

$$s_t = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (AR_{it} - AAR_t)^2}$$

AR_{it} = abnormal return

AAR_t = average abnormal return

N = sample size

This test statistic is followed by a Student-t distribution with N-1 degrees of freedom. In case the absolute value of the test statistic is greater than 1.96 then the null hypothesis is rejected. This means that the average abnormal return for the security i is empirically different from zero at 5% significance level. *The value of 1.96 is taken from a standard normal distribution with a mean value of 0 and a standard deviation of 1. 95% of the normal distribution lies between ± 1.96 .*

Lastly, the CAR per firm and the CAAR as the average of the former's will be found. Next, a CAR will be run in a regression where the p-value or t-value of the constant illustrates whether the returns are significant. Even though the regression in STATA provides both the p-value and t-value, the results of p-value will be preferred as it utilizes robust standard errors (Princeton University, 2003).

Therefore, in this event study analysis the estimation window of 30 trading days (t-60, t-30) will be used with three different types of event windows: before, during and after the announcement of the M&A deal. Different event windows will be analyzed to see if there was for example insider trading before the public announcement and whether there was a significant after announcement effect. The event windows were chosen based on discussed methodologies in section 2.3. *Value Creation and Wealth Effects*. The breakdown of event windows is the following:

- before the announcement: (t-29, t-1) and (t-1, t-1)
- during the announcement: (t-1, t+1), (t-2, t+2) and (t-5, t+5)
- after the announcement: (t+1, t+15) and (t+1, t+30)

3.3. Regression Analysis

In order to test the second hypothesis of the research paper multiple regression analyses were conducted. Once the constants of CAR and CAAR were obtained from the event study analysis, the value of CAR was used separately as a dependent variable in the multiple regression analysis. The latter was used to estimate whether the selected control variables influence the value of the abnormal returns. The following regression was used:

$$CAR_i(T_1, T_2) = \beta_0 + \beta_1 * Total\ Assets + \beta_2 * Book\ Value\ per\ Share + \beta_3 * Number\ of\ Shares\ Outstanding + \beta_4 * Gross\ Profit + \beta_5 * Operating\ Income + \beta_6 * Operating\ Expenses + \beta_7 * Market\ Value + \beta_8 * Merger\ Completion + \varepsilon_i; \text{ where} \quad (6)$$

$CAR_i(T_1, T_2)$ = cumulative abnormal returns of the sample in the event window (T_1, T_2)

β_0 = the constant term

β_i = the beta coefficient of a control variable

ε_i = the error term

Furthermore, various dummy variables had to be created since not all the control variables are numeric. A set of dummy variables were made for the state of the U.S. and SIC codes as they are categorical factors.

Additionally, as the data includes target companies then it could be the case that the most recent and published financial year was outside of the estimation window, for example in year 2006. In order to avoid the risk of not accounting for the most recent fiscal year (which could have been 2006) or taking the financial information of the combined/parent company and to account for the size effect of the target company accurately the average of total assets for the years 2005, 2006 and 2007 was taken. Similar approach of the last three-year averages was used for book value per share, gross profit, net income, operating expenses, market value.

The control variable with only one year and with the most recent data was taken for number of common shares outstanding. Furthermore, in the regression three different types of fixed effects were included: state, industry and year. These variables are not the main variable of interests and

therefore used as fixed effects to make sure that the coefficients on the deal characteristic variables are not biased. The fixed effects were used consecutively by adding an extra effect one at the time for the next regression run.

4. Main Results

In this section of the paper, the main results of the study are analyzed. This section is divided into two parts. First, the descriptive statistics of the data will be discussed, which enables to get a clearer and better overview of the entire sample. Second, a more detailed analysis of event studies will be described along with multiple regression analysis, fixed effects and significance tests.

4.1. Descriptive Statistics

The data includes a sample of 289 M&A deals announcements in the United States in year 2007 from different industries. The total number of companies in this sample is 181.

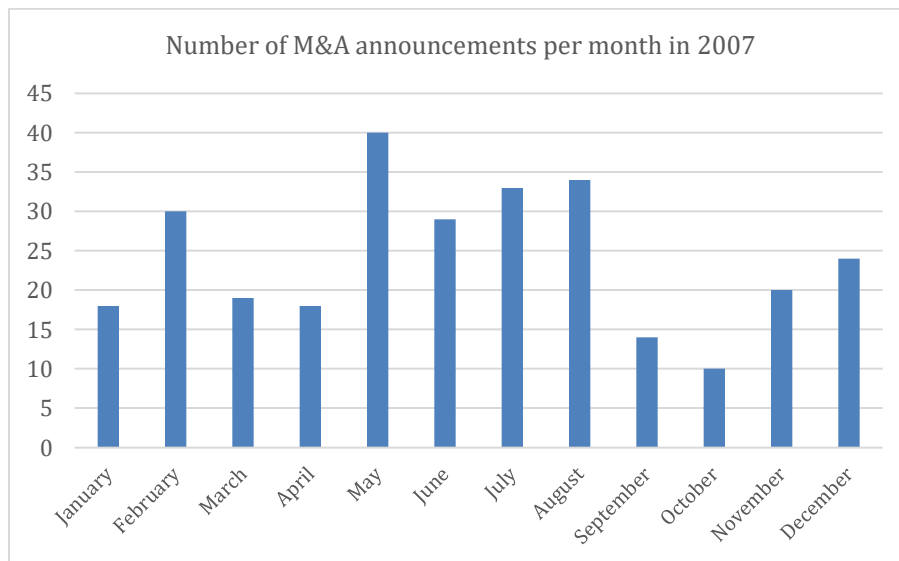


Figure 1. An overview of the number of merger and acquisition announcements per month in 2007

In *Figure 1*, there is a monthly overview of M&A announcements for the year 2007 in the United States of America. The number of announcements is the highest for the months of May, July and August by having 40, 29 and 33 monthly announcements respectively. The number is the lowest for the following months – September and October by having 14 and 10 M&A announcements respectively. However, this low-high monthly trend is not expected to change the research results,

especially since the regression will be controlling for the time fixed effects. *Figure 1* rather serves for illustration purposes to have a better overview of the monthly distribution of the M&A announcements.

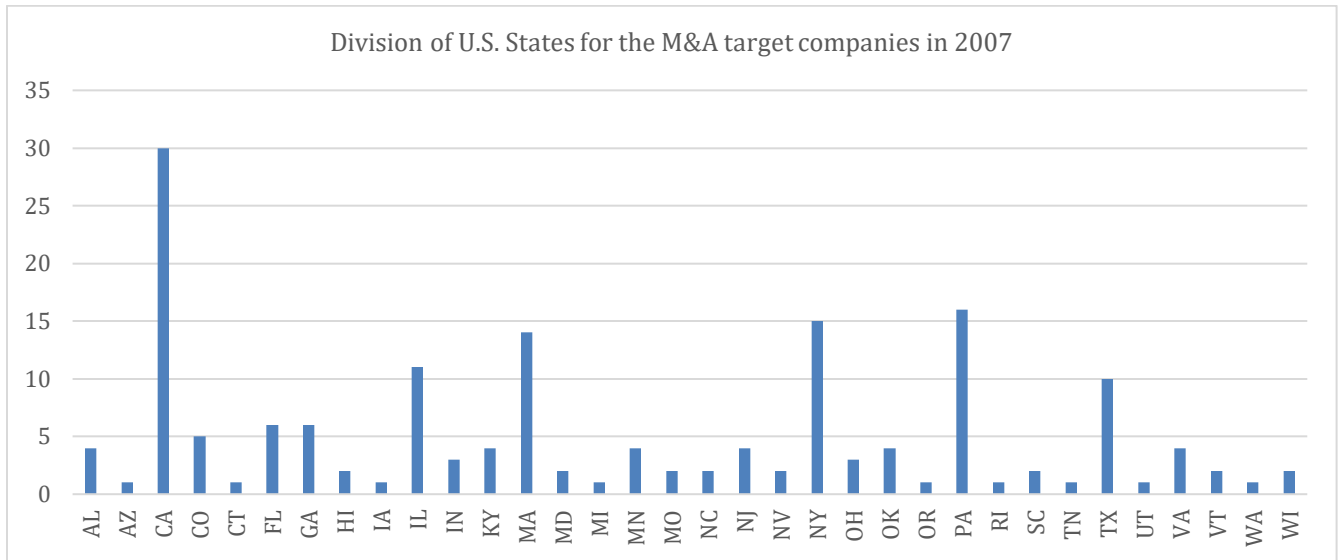


Figure 2. An overview of the location of the M&A target companies in the United States in 2007

From *Figure 2* it can be seen that the U.S. state with the highest number of M&A announcements is CA (California) by having 30 yearly M&A announcements. After California the following states have the highest number of M&A announcements: IL (Illinois), MA (Massachusetts), NY (New York), PA (Pennsylvania) and TX (Texas) by having respectively 11, 14, 15, 16 and 10 yearly announcements. This can be explained by the population per U.S. state. According to the data from 2000-2010, California was one of the most populated states in the United States of America in 2007 and still continues to be so today (United States Census Bureau, 2018). Moreover, the top three most populated cities back then in the United States were California, Texas and New York which in this data set also have one of the highest numbers of M&A announcements. Furthermore, not surprisingly the states with the highest number of S&P 500 fortune companies are also located in California, Texas and New York (S&P Dow Jones Indices LLC., 2019).

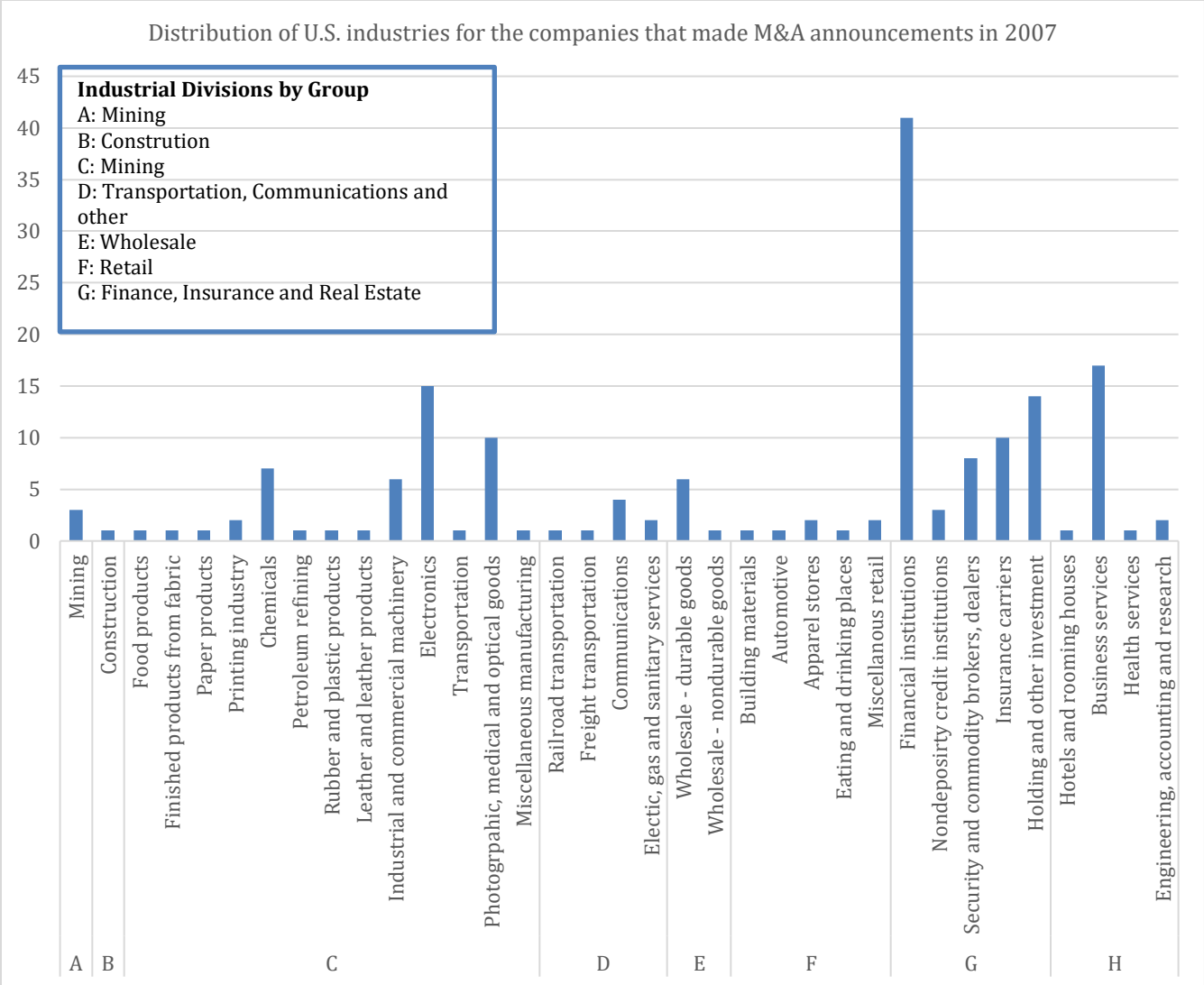


Figure 3. Division of the target firms over their SIC industry divisions and categories in the U.S. in 2007.

In Figure 3, the presented industries were classified via the SIC codes. Most of the M&A announcements in this sample come from the finance, insurance and real estate sector (division G). Another popular sectors are also mining (division C) and services (division H). This is not unexpected as the academical findings discussed in 1. Introduction show a similar pattern for the same high M&A-intensity industries. As a matter of fact, when looking at the data from Institute for Mergers, Acquisitions and Alliances (2019) more carefully then mining, professional services and financials are in reality the three biggest industries that have the highest number and value of M&A deals by target companies in 1985 to 2016. This illustrates that the sample is well representative of the worldwide data.

Control variables	Mean	St. Dev	Minimum	Maximum
Total assets (in \$ thousands)	24 239.21	130 048.50	5.57	1 021 526.00
Book value per share (in \$ thousands)	14.19	14.90	-0.06	102.31
Common shares outstanding (in 1000)	134.77	310.24	1.79	1 970.00
Gross profit (in \$ thousands)	1 872.10	6 908.22	-355.87	49 221.67
Operating income (in \$ thousands)	307.80	890.67	-252.40	5 331.33
Operating expenses (in \$ thousands)	3 137.71	8 940.39	9.18	72 768.00
Market value (in \$ thousands)	4 806.74	12 349.96	12.45	72 722.53

Table 1. Descriptive statistics for the target firm in the U.S. in 2007.

From Table 1 it is clear that the sample of companies is very diverse as for each control variable there is a substantial range difference between the minimum and maximum values. This makes sense as the data includes both smaller and larger companies from both private and public sector.

4.2. Event Study Analysis

After descriptive statistics, it was tested whether the cumulative abnormal returns (CAR) differ significantly from zero to see whether abnormal returns are actually present or not.

Event Window	CAR	CAAR	t-value	p-value	Significance	Number of observations
Before the announcement						
(t-29, t-1)	-0.003	-0.008	-0.190	0.852		92, 580
(t-15, t-1)	0.003	-0.006	0.240	0.809		97, 326
During the announcement						
(t-1, t+1)	0.137	0.119	8.810	0.000	***	110 502
(t-2, t+2)	0.140	0.124	9.010	0.000	***	110 502
(t-5, t+5)	0.161	0.180	6.700	0.000	***	110 502
After the announcement						
(t+1, t+15)	0.066	0.104	2.730	0.007	***	109,498
(t+1, t+30)	0.048	0.039	3.110	0,002	***	103,635

Table 2. The cumulated abnormal returns and the cumulated average abnormal returns of the target firms in the total sample with significance levels. The t-value and p-value are results from a t-test with a null hypothesis of cumulated abnormal returns being equal to zero. The significance level of 1%, 5% and 10% is indicated respectively by *, ** and ***.

The significant values of CAR for target firms were found for periods during and after the announcement. Moreover, these values were highly significant at 1% level as the p-value was less than 0.01. As there are no significant returns before the announcement date it indicates that there

was no insider information that could have generated abnormal returns. On average, during the announcement period the cumulative abnormal returns for the target companies were 13.7% to 16.1%, which is in line with the empirical studies from 2. *Related Literature*. Furthermore, the cumulative average abnormal returns for the target companies were between 3.9% to 18%.

4.2.1. Regression analyses

Next, multiple regression analyses were carried out in three event windows: 3 days (t-1, t+1); 5 days (t-2, t+2) and 11 days (t-5, t+5). The regression analyses were run with CAR as the dependent variable. The regression included control variables, mentioned in section 3.1.2. *Control Variables* and fixed effects of state and industry. Three multiple regressions with different fixed effects were run for each event window. In the first column only the state fixed effect was included and in the second column the industry fixed effect was added. This allowed to make sure that the coefficients on the deal characteristic variables were not biased.

For all the event windows it was seen that the R-squared was highest for the model with all the two fixed effects included. Furthermore, for most of the results the coefficient values were highly significant at a 1 % level. A more detailed analysis of each event window can be found below.

Variables	CAR (-1, 1)	CAR (-1, 1)
Constant	0.595***	0.142***
	(0.081)	(0.488)
Total Assets	-0.097***	-0.072
	(0.015)	(0.058)
Book Value per Share	0.255***	0.284***
	(0.050)	(0.055)
No. of Shares Outstanding	-0.001***	-0.001***
	(0.000)	(0.000)
Gross Profit	0.426***	2.145***
	(0.062)	(0.111)
Operating Income	0.257***	0.971***
	(0.027)	(0.045)
Operating Expenses	-0.905***	-1.351***
	(0.046)	(0.060)
Market Value	0.457***	-1.635***
	(0.050)	(0.117)
Merger Completion	0.010	0.219**
	(0.053)	(0.080)
State Fixed Effect	yes	yes
Industry Fixed Effect	no	yes
Observations	23,685	23,685
R-squared	0.806	0.882

Table 3. The results of multiple regressions with fixed effects from the sample of target companies with CAR (-1,1) as the dependent variable.

In Table 3, the multiple regression was run with an event window of three days: a day before the announcement, at the announcement day, a day after the announcement. The majority of coefficients in three of the columns are positive and significant at a 1% level. From the results it is seen that the asset size is significant at 1% when only the state fixed effects are included. However, the former doesn't play a great role in the regression as the coefficient values are close to zero. The coefficients of book value per share however are positive and the coefficient values remain around 0.26-0.28. This means that if the book value per share increases by 1% the expected increase in CAR is by $(\beta_1/100)$, which means an increase of 0.026 to 0.028 units of the dependent variable, keeping everything else equal. Furthermore, the coefficient of the number of shares is

significant but doesn't have a big impact on the firm's cumulative abnormal returns as the values are close to zero. In terms of gross profit and operating income, all the coefficients are significant at a 1% level and have the greatest value in magnitude when all the fixed effects, both state and industry, are included in the regression. When looking at the second column only, if the gross profit is increased by 1% then it results in an expected increase of CAR by 0.215 units, keeping everything else equal. Similarly, in the second column, if the operating income increases by 1% then the CAR is expected to increase by 0.097 units, keeping everything else equal. Operating expenses have a significant negative effect on the cumulative abnormal returns. When also looking at the second column only, if the operating expenses increase by 1% the CAR decreases by -0.135 units, keeping everything else equal. Similarly, market value has a negative effect on the latter. When looking at the second column again, if the market value increases by 1% then the CAR decrease by -0.164 units, keeping everything else equal. This result is in accordance with the coefficients for the number of shares outstanding, which also showed a negative effect on the CAR. Furthermore, whether merger was completed or not, shows significant results only when both fixed effects are included. When looking at the second column, when the merger was completed the cumulative abnormal returns increase by 0.219 units, keeping everything else equal.

In terms of the first hypothesis, the results reject the first null hypothesis that wealth effects of M&A are zero for the shareholders. It is clear from all the columns that the M&A announcements as a whole generate positive cumulative abnormal returns for the target company and its shareholders. In terms of the second hypothesis, the results reject the second null hypothesis to a certain extent. The coefficient values and significance levels show that the total assets and number of shares outstanding have minimal or even close to zero effect on CAR, whereas the other factors have significant positive or negative effects.

Variables	CAR (-2, 2)	CAR (-2, 2)
Constant	0.159*	0.132***
	(0.090)	(0.476)
Total Assets	-0.218***	-0.325***
	(0.017)	(0.058)
Book Value per Share	0.292***	0.366***
	(0.048)	(0.056)
No. of Shares Outstanding	-0.001***	-0.001***
	(0.000)	(0.000)
Gross Profit	0.427***	2.026***
	(0.061)	(0.109)
Operating Income	0.045	0.633***
	(0.028)	(0.046)
Operating Expenses	-1.020***	-1.534***
	(0.046)	(0.060)
Market Value	0.874***	-0.835***
	(0.062)	(0.121)
Merger Completion	0.283*	0.942**
	(0.059)	(0.105)
State Fixed Effect	yes	yes
Industry Fixed Effect	no	yes
Observations	23,685	23,685
R-squared	0.894	0.933
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 4. The results of multiple regressions with fixed effects from the sample of target companies with CAR (-2,2) as the dependent variable.

In Table 4, the multiple regression was run with an event window of five days: two days before the announcement day, at the announcement day, two days after the announcement. The majority of coefficients in two of the columns are positive and mostly significant at a 1% level, likewise in Table 3 above. In fact, the second column of this multiple regression gives almost all 1% significance level values. Furthermore, it is depicted that the asset size is mostly significant at 1% and has a negative effect on CAR by having a range of values of -0.22 to -0.33. Nonetheless, the

coefficients of book value per share are positive and remain around 0.29-0.37. This means that if the book value per share increases by 1% the expected increase in CAR is by 0.029 to 0.037 units of the dependent variable, keeping everything else equal. Furthermore, the coefficient of the number of shares is significant but doesn't have a big impact on the firm's cumulative abnormal returns as the values are very close to 0. In terms of gross profit and operating income, all the coefficients are significant at a 1% level when both the state and industry fixed effects are included. If the gross profit is increased by 1% then it results in an expected increase of CAR by 0.20 units, keeping everything else equal. Similarly, in the second column, if the operating income increases by 1% then the CAR increases by 0.063 units, keeping everything else equal. Operating expenses have a negative effect on the cumulative abnormal returns. When also looking at the second column only, if the operating expenses increase by 1% the CAR decreases by -0.153 units, keeping everything else equal. The effect of market value on the latter deviates from values of -0.835 to 0.874. This means that if the market value increases by 1% then the CAR deviates between a decrease of -0.084 and an increase of 0.087 units, keeping everything else equal. Additionally, whether merger was completed or not, shows significant positive results. When looking at the second column again, when merger was completed the cumulative abnormal returns increase by 0.942 units, keeping everything else equal. In comparison to the event window of three days, in the case of five trading days the R-squared values are relatively higher indicating a better fit with the data.

In terms of the first hypothesis, the results reject the first null hypothesis that wealth effects of M&A are zero for the shareholders. It is clear from all the columns that the M&A announcements as a whole generate positive cumulative abnormal returns for the target company and its shareholders. In terms of the second hypothesis, the results reject the second null hypothesis to a certain extent. The coefficient values for the number of shares outstanding show a very minimal close to a zero effect on CAR. Hence the factors that can be considered with a significant influence on CAR are all the control variables except number of shares outstanding. In addition, as seen from the findings above, the results with both the state and industry fixed effects (second column) are considered more reliable than the regression with only state effect as the former has higher R-squared value and more coefficients with higher significance levels.

Variables	CAR (-5, 5)	CAR (-5, 5)
Constant	-0.594	0.128***
	(0.250)	(0.474)
Total Assets	0.406***	0.443***
	(0.035)	(0.101)
Book Value per Share	1.145***	4.356***
	(0.071)	(0.129)
No. of Shares Outstanding	-0.000***	0.011***
	(0.000)	(0.000)
Gross Profit	2.339***	5.187***
	(0.087)	(0.156)
Operating Income	0.497***	1.464***
	(0.054)	(0.065)
Operating Expenses	-1.923***	-3.239***
	(0.073)	(0.106)
Market Value	-0.952***	-5.016***
	(0.121)	(0.171)
Merger Completion	0.843***	1.237***
	(0.100)	(0.186)
State Fixed Effect	yes	yes
Industry Fixed Effect	no	yes
Observations	23,685	23,685
R-squared	0.872	0.959
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 5. The results of multiple regressions with fixed effects from the sample of target companies with CAR (-5,5) as the dependent variable.

In Table 5, the multiple regression is run with an event window of eleven days: five days before the announcement date, at the announcement date, five days after the announcement date. All the coefficients in two of the columns are positive and significant at a 1% level.

From the results it is seen that the cumulative abnormal returns have the biggest magnitude when both fixed effects are included likewise also seen in *Table 3* and *Table 4*. In regards of the asset size the magnitude ranges from 0.406 to 0.443 in the two columns respectively. This implies that if the total asset size increases by 1% then the CAR increases by 0.041 to 0.044 units, keeping

everything else equal. Furthermore, the coefficients of book value per share are positive and remarkably higher when compared to the previous event windows of *Table 3* and *Table 4*. When the book value per share increases by 1% then the CAR increases by 0.115 to 0.436 units, keeping everything else equal. In comparison to the smaller event windows portrayed previously there was not as big increase in the CAR as it is with the event window of 11 days.

The coefficient of the number of shares outstanding is significant but doesn't have a big impact on the firm's cumulative abnormal returns as the values are very close to a value of 0, likewise also in *Table 3* and *Table 4*. In terms of gross profit and operating income, both of the coefficients are positive in the regression. When looking only at the second column of *Table 5*, a 1% increase in the gross profit results in an increase of CAR by 0.519 units, keeping everything else equal. Similarly, the operating income shows a significant positive increase when looking at second column of *Table 5*. Similarly, when operating income increases by 1% then CAR increase by 0.146 units, keeping everything else equal. Yet, the impact of gross profit is greater on CAR as in absolute terms the coefficient values range between two and five, whereas for the operating income the coefficients are mostly around value of one.

Operating expenses of the company have a negative effect on the cumulative abnormal returns, which was also found in the previous regressions results from *Table 3* and *Table 4*. If the operating expenses increase by 1% then CAR decreases by -0.019 to -0.324 units, keeping everything else equal. Moreover, the effect of market value on CAR is negative at a 1% significance level. Consequently, a 1% increase in the market value results in a decrease of CAR by -0.095 to -0.502 units, keeping everything else equal.

In terms of the first hypothesis, the results reject the first null hypothesis that wealth effects of M&A are zero for the shareholders. It is clear from all the columns that the M&A announcements as a whole generate positive cumulative abnormal returns for the target company and its shareholders. In terms of the second hypothesis, the results reject the second null hypothesis to a certain extent. The coefficient values for the number of shares outstanding show a very minimal close to a zero effect on CAR. Hence, the factors that can be considered with a significant influence on CAR are all the control variables (mentioned in section 3.1.2. *Control Variables*) except number of shares outstanding likewise with an event window of (t-1, t+1) and (t-2, t+2). In addition, as

seen from the findings above, the results with both the state and industry fixed effects are considered the most reliable as all their coefficients have a 1% significance level and the regression has the highest R-squared value among all.

To sum up all the main findings and the effects of variable interest on the cumulative abnormal returns the following table was created to give a general overview.

Variables	Effect on CAR
Constant	13-14%
Total Assets	+
Book Value per Share	+
No. of Shares Outstanding	n/a
Gross Profit	+
Operating Income	+
Operating Expenses	-
Market Value	-
Merger Completion	+
Effect: + (positive), - (negative) and n/a (no effect)	

Table 6. General overview of the multiple regression results from the sample of target companies with CAR as a dependent variable and with event windows of (t-1, t+1); (t-2, t+2) and (t-5, t+5).

Consequently, as seen from *Table 6*, with all being equal the cumulative abnormal returns are around 13-14% during one to five days before and after the M&A announcement date. In terms of the effects, when looking at the results of the three event windows all together, the asset size tends to have a very small yet positive effect on the company's CAR during the merger announcement. This means that the bigger the size of the company the more cumulative abnormal returns tends to be generated. Additionally, when the book value per share of the company increases the generated CAR will also increase. Unfortunately, the number of common shares didn't give any outstanding results since all the coefficient values were close to zero. Therefore, their effect is treated as "n/a" indicating that there is no change in CAR value.

Furthermore, when looking at the findings from *Table 3 - Table 5*, gross profit has a bigger positive effect on the cumulative abnormal returns than the operating income. Moreover, the effect of operating expenses is negative for the shareholders' value and in terms of magnitude shows to create the most decrease. Similarly, the effect of market value on cumulative abnormal returns is

negative, which means that the higher the market value the lower the returns. Nonetheless, in case of the merger completion the market returns are also higher.

Consequently, the majority coefficients showed empirically strong results with a 1% significance level. Hence, it is seen from various regressions that CARs are positive for the target firms. When looking at the most reliable regression results the CAR values fluctuate around 13%-14%, which is in accordance with the empirical studies discussed in 2. *Related Literature*. Nonetheless, it is difficult to find all the available control variables that could result in significant coefficients values and in efficient number of observations, but the results are still considered to be reliable and empirically valid.

5. Conclusion

In conclusion, the year 2007 was active year in terms of mergers and acquisitions for the United States of America. Contrary to what was expected the economic conditions didn't affect the results differently than what the empirical evidence suggested. Moreover, as M&A is a strategy to fight for competitive advantage and against the dynamic forces in the market, the announcements could have actually been a good move for the companies to take in order to survive the economic meltdown in the next following years. Furthermore, it is important to put the attention on the fact that this research investigated only the M&A announcements for the target companies.

In regards of the main findings, the results reject the first null hypothesis since it is clear from all the results that the M&A announcements as a whole generate positive cumulative abnormal returns for the target company and its shareholders. The value of CAR fluctuates on average from 13% to 14% depending on which event window to look at. Nonetheless, the relationship between M&A announcements and shareholders' returns is positive.

Furthermore, the results reject the second null hypothesis as all the investigated variables of interests show significant coefficient values except for the number of shares outstanding. Therefore, based on the main findings, factors that significantly can explain these wealth effects from M&A are size, book value per share, gross profit, operating expenses and market value while taking into account the state and industry fixed effects.

To answer the research question and when summarizing the main the results, it was found out that there were positive wealth effects of M&A announcements for target firms in the United States of America in 2007 and to a large extent firm specific factors such as total assets, book value per share, gross profit, operating expenses and market value play a role in creating shareholder value.

5.1. Limitations and further research

With respect to a further research there are aspects that unfortunately were limitations in this research and can be improved in the future. Firstly, the target side of the M&A announcements was only investigated. This was done due to the complex nature of investigating bidders (*see 2.3. Value Creation and Wealth Effects*) and due to the lack of expertise of mine. In the future, as I have now more experience with event studies it would be better to also look at the bidder side of the M&A announcements in order to get an overall depiction of the entire movement of stock returns. Nonetheless, this research was able to provide a very good overview from the target side of M&As.

Furthermore, the sample size could have been bigger by involving more companies from different years. However, since not all the data is public and easily accessible it was difficult to execute a sample of bigger size. Moreover, as the existing data of this research was already taken from three different databases the time constraint limited on extracting even more observations, which would have made the entire process even more compound. On the other hand, in the future with a more time available larger data extraction could be definitely done. By doing a similar research on a global scale will certainly help to better understand the role of particular continents and/or geographical regions on M&A announcements and stock returns. It would have been interesting to see how big influence if any geography has on CAR rather than analyzing only the United States of America.

In case of no time constraint it would have been also very exciting to look at the long-run performance of the target as well as bidder firms after the M&A announcements were made. Moreover, if I would have had more time, knowledge and expertise I would have wanted to extend the research even further. It would have been very interesting to also conduct a research about the effect of M&A announcements on a consumer level by for instance looking at how the prices of

goods and services changed for final customers and whether companies actually become more profitable and efficient in the eyes of the end customers. Perhaps this could be something that can be done for the master's thesis.

6. Appendix

Appendix 1 - Divisions and categories for the SIC codes

A: Mining;

B: Construction;

C: Manufacturing (food products, finished products from fabric, paper products, printing industry, chemicals, petroleum refining, rubber and plastic products, leather and leather products, industrial and commercial machinery, electronics, transportation, miscellaneous manufacturing, photographic, medical and optical goods);

D: Transportation, communications, electric, gas and sanitary services

E: Wholesale

F: Retail

G: Finance, insurance and real estate

H: Services

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