



**Radboud Universiteit Nijmegen**

## Master Thesis

**How does a Merger or Acquisition announcement could influence the acquirer's stock price?**

Student name: Nikolay Ferdinandov

Student number: s1005166

Study Program: Master's in Economics (Corporate Finance and Control)

Supervisor: Jan Schmitz

Date: 07/16/2020

## **Summary**

The focus of this paper was to examine and compare what is the influence of merger or acquisition announcement on the acquirer's stock price in a period that includes the financial crisis of 2007-2010 and in a non-crisis period. To answer the research question and test the hypotheses, an event study approach was used. The data used to answer the research question consist of 180 U.S. based companies, which have been listed on the New York Stock Exchange. The dataset is split into companies that have been involved in M&A during the crisis and in the non-crisis time and companies that did not have merger or acquisition for the same timeframes. It has been found that in a period of financial crisis, abnormal returns do not equal to zero, three days after the M&A announcement. It has been also found that during the financial crisis, the CARs for both timeframes – throughout the financial crisis and in the non-crisis period were negative, being significantly more negative in times of financial distress.

## Contents

<b>1. Introduction</b> .....	3
<b>2. Literature review and hypotheses development</b> .....	5
<b>2.1. Positive influence of M&amp;A announcement on the stock price</b> .....	5
<b>2.2. Negative influence of M&amp;A announcement on the stock price</b> .....	6
<b>2.3. Positive effects of M&amp;A on firm's performance</b> .....	7
<b>2.4. Negative effects of M&amp;A on firm's performance</b> .....	8
<b>3. Research Methodology</b> .....	9
<b>3.1. Abnormal returns</b> .....	10
<b>3.2. Data</b> .....	11
<b>4. Empirical results</b> .....	11
<b>4.1. Counterfactual</b> .....	12
<b>4.2. Abnormal returns</b> .....	13
<b>4.3. Cumulative abnormal returns</b> .....	16
<b>5. Analysis</b> .....	17
<b>6. Conclusion</b> .....	18
<b>7. Bibliography</b> .....	20

# 1. Introduction

Mergers and acquisitions refer to a process when an ownership control is transferred from the “Target” to the ‘Acquirer”. The main difference between mergers and acquisitions according to Motis (2007) relies on how the transaction is announced to the target organization. Furthermore, mergers and acquisitions have been an essential tool for growth of many organizations worldwide. For example, Zhang et al. (2011) illustrated that companies benefit from M&A through increased market power and lower the cost of capital. In addition, Alexandridis et al. (2017) provided an evidence that mergers and acquisitions deals lead to positive and statistically significant excessive returns for acquiring organizations due to creation of value. Nevertheless, a great course of action for realizing value creation is diversification. Although many of the acquiring organizations decide to pursue mergers or acquisitions in the same or related industry for easier post M&A integration purposes, many other companies also acquire or merge with firms that operate in different sector, as this is a great opportunity to diversify their business and realize financial synergy by offering their products to a different market and different customers. However, mergers and acquisitions have their shortcomings. It is arguable that most of the mergers and acquisitions continue to underperform financially. A good example of this is the article by Cartwright (2002). The author pointed lack of motivation to integrate the new employees, once the new organization is formed, as well as market changes as main causes of the failures. Furthermore, Malmendier & Tate (2015) found that there is high degree of likeliness across executives to pay excessively for a target and hence, engage in unprofitable deals. Nevertheless, mergers and acquisitions have become an important part of the Finance world for the past couple of decades. As a result, a lot of academic articles focused on the importance of mergers and acquisitions. For example, Harrison et al. (2001) indicated that the number of M&As have been growing each year since 1993. More precisely, in 1997, there were approximately 22,000 mergers and acquisitions with a total value of \$300 billion more than all acquisitions during the 1980s.

The financial crisis of 2007-2010 negatively impacted the global financial market, which itself had an influence on mergers and acquisitions activity. The studies by Grave et al., (2012) and Godfred Amewu (2014) indicated that the negative effect was most clearly seen in terms of liquidity issues, which led to a situation where most companies struggled to keep their businesses going due to the big uncertainty and lack of trust between banks and other financial institution. As a result of that, banks were no longer willing to lend to each other, as well as, to

companies in need. Hence, Godfred Amewu (2014) concluded that this economic uncertainty led to a significant decrease of mergers and acquisitions because according to Luan et al., (2013), in times of economic instability, if companies decide to pursue merger or acquisition and the deal turns out to be unsuccessful, then the acquirers may cease to exist. On the other hand, Luan et al., (2013) and Rao-Nicholson et al., (2016) also declared that many companies may be underestimated because of the worsen economic circumstances. Therefore, if acquirers pursue a merger or acquisitions, they might have better possibility to generate positive abnormal returns.

Most of the previous related literature has examined the impact of M&A announcement on the stock price either in the period prior to the 2007-2008 financial crisis (Selcuk & Yilmaz, 2011; Bouwman et al., 2003; Bhaumik & Selarka, 2008) or in the post crisis period (Adnan et al., 2016; Stunda, 2014). Previous scholars such as Tilica et al. (2012); Drymbetas & Kyriazopoulos, 2014; Liang (2013) that included the period of the economic crisis focused on the Eastern Europe, Western Europe, and Hong Kong region, respectively. Therefore, the contribution of this paper is going to be as follows. This paper is going to focus on explaining and comparing the influence of M&A announcement on the acquirer's stock price in the United States in the periods that includes both - the 2007-2010 economic crisis as well as the non-crisis period. However, the main motive to include the financial crisis period to examine the effect of M&A announcement on the acquirer's stock price and to compare the results to non-crisis period is because as discussed above, the 2007-2010 financial instability limited the funding opportunities for many organizations and put them at risk of bankruptcy. On the other hand, it also created more possibilities for lower priced mergers and acquisitions, which could generate higher abnormal returns. Hence, it will be interesting to investigate to what extend the acquirer's stock price was influenced by the M&A event and to what extend by the financial crisis, and compare both periods and observe whether the financial crisis had a negative or positive impact for acquirer's stock price around merger or acquisition announcement in comparison with the non-crisis time. Therefore, the research question of this paper is "*How does M&A announcement affect the acquirer's stock price in time of a crisis in comparison to non-crisis period?*".

The rest of this paper is organized as follows. Chapter 2 summarizes the existing literature and composes the hypotheses. Chapter 3 describes the methodology and the data to be used. Chapter 4 will present the empirical results. Following by chapter 5, which will analyze the results. In the end, chapter 6 will conclude and provide recommendation for further research.

## **2. Literature review and hypotheses development**

### **2.1. Positive influence of M&A announcement on the stock price**

As briefly mentioned in the introduction, a lot of attention has been dedicated to mergers acquisitions recently. One of the examples is the paper of Adnan et al. (2016). In their research the authors examined how the stock price respond to merger announcement for both – the acquirer and target. Their study further explored the stock market of the United States of America and concluded that in period of non-financial turmoil, the Cumulative average abnormal return (CAAR) showed an upward trend in the period shortly before the announcement for the acquirer and the target. In addition, their conclusion was based on the facts that there might have been leakage of information or because the market already foresaw the merger. Furthermore, Mishra (2018) has extended the preceding related literature by including and thoughtfully focusing on the utmost importance of the bid premium. However, he provided evidence that the bid premium negatively impacts the Cumulative abnormal return (CAAR). Moreover, Mishra (2018) further found that the CAR was positive and therefore the stock price grew upon the M&A announcement. He explained those findings as follows. Firstly, upon the announcement of the event, the shareholders of the acquiring firms anticipate to receive synergy<sup>1</sup>. Another possible cause for the positive abnormal returns is the industry the merging companies are. If acquirers and their targets operate in the same industry that would mean that all companies are more familiar with each other, which allows for better post-merger integration (Mishra, 2018). In addition, based on 136 domestic mergers in developed economies such as Japan, it was found positive abnormal returns for bidders in a period of financial stability. However, the largest returns were realized shortly prior to the announcement (2 days) but importantly, quickly lost thereafter (Van Schaik, & Steenbeek, 2004).

Alexandridis et al. (2010) similarly to Mishra (20118) focused on the premium. They studied American and Canadian firms and concluded that acquirers generate at best zero abnormal returns but however, pay lower premium and therefore generate more gains in less competitive markets. Following the same pattern of an increased abnormal return, the article by Aditya et al. (2014) illustrated a growth trend based on a 60-day period. The authors found a 0.54% positive abnormal return at the 25<sup>th</sup> day post-announcement. However, a slight decrease of 0.10% was observed, leading to 0.44% abnormal return at the 30<sup>th</sup> day after the event

---

<sup>1</sup> The synergy must be greater than the premium paid if the acquisition is expected to generate returns (Hitt et al., 2009).

announcement. According to Aditya et al. (2014) and indistinguishable from the conclusion of Adnan et al. (2016) an inside information might have been publicly revealed regarding the M&A and as a result, the financial stock market appropriately reflected this information. Additionally, when discussing the positive influence of M&A, it is also important to state Economies of Scale. Acquirers registered increase in value following mergers or acquisitions through Economies of Scale (Aditya et al., 2014).

On the other hand, according to Nguyen (2015) a lot of small and less financially stable firms were threatened to go into default because of the economic meltdown. The author further suggested that this led to lower competition and a possibility for companies to acquire their competitors at lower purchase price and thus, generate higher returns. Furthermore, Beltratti & Paladino (2013), illustrated in their paper that merger or acquisition during a crisis is a sign of financial stability towards investors, and therefore, it leads to higher stock returns. The authors explained this by the fact that authorities were only allowing mergers and acquisitions of organizations with solid financial strength and their targets were forced to sell their assets at cheap price due to shortage of capital.

Therefore, this leads to the first hypothesis of the paper:

*H1: Acquirers are expected to generate higher abnormal returns around the M&A announcement in time of crisis, compared to non-crisis period.*

## **2.2. Negative influence of M&A announcement on the stock price**

Mergers and acquisitions could also be disadvantageous. For example, in the above sub-section, I discussed the article of Mishra (2018). The general conclusion of that paper was that M&A announcement positively impacts the stock price. However, the author also emphasized on the fact that when the event window expands, it could lead to negative abnormal returns because other important event can take place and thus, disentangle the effect of M&A. Furthermore, Agrawal et al. (1992) reported that mergers and acquisitions are negatively associated with the wealth of acquirer's stockholders by indicating 10% loss in the post-merger period. The authors explained this short-run underperformance with the fact that the market does not adjust quickly enough to the merger announcement.

With regards to underperformance of the acquirer in times of financial stability, Bouwman et al. (2003), found that it is related to market-timing<sup>2</sup>. Nevertheless, they described market-timing as an inducement for unprofitable acquisitions and concluded that the overvaluation is the primary cause for negative excessive returns. In contrary, Franks et al. (1991) argued that the underperformance of the stock price following M&A deal for bidders is related to benchmark errors rather than mispricing. The scholar further explained that, correlation between inaccurate market valuation and post-acquisition stock return, the level of overvaluation of the acquirer contributes for describing the long-run underperformance. More specifically, in non-crisis period, negative abnormal returns are detected when there is an increased overestimation in the period prior to the M&A event (Lin et al., 2011). On the contrary, Rao-Nicholson et al., (2016) found that in a period of financial turmoil, acquiring firms that conduct cross-border mergers and acquisitions underperform significantly and thus, generate negative returns. In addition, Drymbetas & Kyriazopoulos (2014) established a negative market reaction and more specifically abnormal returns when the M&A deals are announced throughout the 2007-2010 financial crisis. Even though the market reaction is insignificant, those results could be interpreted as a signal of no confidence from investors towards the capabilities of the acquiring firm to obtain enough profit as well as the market did not foresee the upcoming M&A.

Hence, the second hypothesis is as follows:

*H2: Abnormal returns of the acquirer are presumed to be lower around the M&A announcement in times of a crisis, compared to a period of non-crisis.*

### **2.3. Positive effects of M&A on firm's performance**

Before going into more details, I believe it is important to first describe the link between M&A and firm's performance. When a merger or acquisition is completed, the target firm must be appropriately integrated within the acquirer's strategy to create value (Gates & Very, 2003). Having this clarified, we can go deeper into the literature. To begin, Trichterborn et al. (2016) pointed that the firm's overall performance in non-crisis period was positively related to M&A capability. Another aspect that is of a great importance is the efficiency. According to Morck et al. (1990) mergers and acquisitions could be a mechanism by which firms, which seek to improve their effectiveness acquire businesses that enhance productivity through vertical or

---

<sup>2</sup> Market-timing refers to incentives that make acquirers less careful towards synergies (Bouwman et al., 2003).



horizontal merger<sup>3</sup>. Further related paper is the study of Slotegraaf et al. (2008). However, one of their key findings is that the wealth of the acquirer and the target tend to increase in times of economic stability. In addition, Slotegraaf et al. (2008) argued that because of merger or acquisition, acquiring firms can create competitive advantage in times of non-crisis by leveraging external funds, and with better management of resources. Gates & Very (2003) has contributed to the existing literature by explaining that when firms expand in result of M&A, that would lead to competitive advantage by enhancing acquirer's negotiation power with bankers and suppliers. Furthermore, Gugler et al. (2003) examined and explored the effects of mergers and acquisitions and observed that profitability is positive in a long-run post M&A period.

On the other hand, Rao-Nicholson et al., (2016) concluded that the post-integration is significantly easier in times of an economic distress, compared to normal times. The main reason, according to the authors is because during financial crisis, companies that were willing to engage in merger or acquisition focus on local, friendly deals. They also assumed that when the M&A is friendly, all parties involved in the merger or acquisition work simultaneously to realize synergies as soon as possible.

Therefore, the third hypothesis of this paper is as stated:

*H3: Acquirers tend to perform better around the M&A announcement during a crisis in comparison with non-crisis period.*

#### **2.4. Negative effects of M&A on firm's performance**

It is argued by Asquith (1983) that companies involved in mergers or acquisitions generate significant loss of wealth, which leads to unpleasant firm's performance. The reason for the value destruction, however, is a result of the agency conflict between executives and shareholders (Trichterborn et al., 2016; Morck et al., 1988). To be more specific, the authors elaborated on the fact that managers tend to make decisions that are compatible with their own interests even if they are doubtful for maximizing the shareholder value. Furthermore, Oduro & Agyei (2013) concluded that M&A is deleterious to the overall firm performance because return on assets and return on equity of companies that pursue M&A and firms that are being acquired decreased, leading to operational loss.

---

<sup>3</sup> Vertical and horizontal mergers are defined as merger of firm that provides different supply chain to a similar product and a merger of a company from the same industry, respectively.

With regards to efficiency and market power, the paper of Gugler et al. (2003) is in contrary with the article of Morck et al. (1990) mentioned in the above sub-section. However, Gugler et al. (2003) studied the patterns of sales changes following the mergers. The main result of their article was that most of the mergers result in reduced efficiency and sales in times of non-crisis. In this context, Yeh & Hoshino (2002) provided evidence of significant negative tendency in profitability, productivity, as well as downsize in workforce following the M&A event. With regards, to a period of financial instability Alessandri et al., (2014) found that the efficiency of the financial market decreased during the 2007-2010 financial crisis, leading to shortage of resources and underperformance of firms. The authors further suggested that the economic crisis limited the opportunities for diversification through merger or acquisition, which induced firms to pursue domestic and risky deals in an attempt to enhance their operation, resulting however, in further decline in firm's performance.

Thus, the last hypothesis of this paper is as follows:

*H4: Acquiring firms are expected to underperform more significantly around the M&A announcement in times of financial instability, compared to a period of financial stability.*

### **3. Research Methodology**

To study the influence of an economic event (M&A) on the acquirer's stock price, an event study will be performed. According to MacKinlay (1997), event study has been applied to variety of economic events, such as mergers and acquisitions, earnings announcements etc. In general, the timeline of an event study consists of estimation window, event window and post-event window (Woon, 2004). Estimation window represents the period between  $T_0 - T_1$  of the counterfactual. The event window is defined as the announcement period (0). In addition, it explains what the stock price does before and after the announcement. Lastly, the post-event window refers to the expectations towards the event in long-run.

However, the first step is to calculate the counterfactual. In general, Roese (1997) describes it as alternatives to the past and gather both beneficial and aversive consequences. In the context of this research, counterfactual refers to circumstances that would have come if M&A had not occurred (Kypriannides, 2012), or what the stock price would have been if there was no new information (announcement). In this paper, the counterfactual will be estimated in the following order.

- Firstly, the daily stock returns of all companies individually that did not engage in merger or acquisition throughout the timeline of the research will be computed as stated:

$$\text{Daily Stock return} = \frac{(P_t - P_{t-1})}{P_{t-1}}$$

Where  $P_t$  represents the current day closing stock price and  $P_{t-1}$  illustrates the closing stock price for the previous day. Then, the average of the daily stock returns of all companies not involved in M&A will be computed in order to obtain the information of what the stock price would have been.

However, this is done in order to yield as accurate and unbiased counterfactual as possible, because according to Siddharthan & Narayanan (2016) it is unfeasible to observe what the stock price would have been if only including data on companies that have been engaged in merger or acquisition.

### 3.1. Abnormal returns

Going forward, the next step in determining the influence of M&A announcement on the acquirer's stock price is to estimate the abnormal returns. According to Stickel (1995), abnormal returns (AR) are interpreted as market-adjusted returns minus the expected market-adjusted returns. The formula is stated below:

$$AR_{it} = (R_{it} - R_m) - E(R_I - R_m),$$

Where  $(R_{it} - R_m)$  is the market-adjusted returns and  $E(R_I - R_m)$  is the expected market-adjusted returns.

Subsequently, a t-test, which follows the model of Corrado & Zivney (1992) will be conducted to determine whether abnormal returns (ARs) are different from zero.

$$A^i_{it} = A_{it}/S(A_i),$$

Where  $A_I$  represent the excessive return of a stock. However, each excess return is divided by its standard deviation to obtain a standardized excess return, Corrado & Zivney (1992).

Furthermore, we sum up the daily abnormal returns throughout the event window to obtain the Cumulative Abnormal Returns (CARs) (Pagan & Chu, 2009). The formula used to derive the CARs is taken from (Pagan & Chu, 2009) and is as follows:

$$CAR_{I(T1 - T2)} = \sum_{t=T1}^{T2} AR_{it}$$

Where  $CAR_I$  defines the total excessive returns for company “I” for the period between  $(T_2, T_1)$ .

### **3.2. Data**

The data for the research is obtained from Yahoo finance database. The complete dataset consists of 180 U.S. based companies, which operate in different industries such as pharmaceutical, oil, retail, energy, telecommunication and financial. As an estimation window, I have used stock data in the period, which includes the financial crisis between January 1<sup>st</sup>, 2007 – December 31<sup>st</sup>, 2010 and the non-crisis period. The non-crisis period refers to the period prior to the financial crisis (January 1<sup>st</sup>, 2003 – December 31<sup>st</sup>, 2006) and it also refers to the period following the crisis (January 1<sup>st</sup>, 2011 – December 31<sup>st</sup>, 2014). To be able to precisely estimate the counterfactual and for comparison purposes, I have split the dataset to three parts:

Firstly, I have derived the daily stock prices of 30 acquiring organizations and 30 similar firms that did not have M&A for the period between January 1<sup>st</sup>, 2003 – December 31<sup>st</sup>, 2006.

Secondly, I have obtained the daily stock prices of 30 acquiring companies and 30 similar organizations that did not have M&A between January 1<sup>st</sup>, 2007 – December 31<sup>st</sup>, 2010.

Lastly, I have collected the daily stock prices of 30 additional acquirers and 30 companies that were not engaged in merger or acquisition between January 1<sup>st</sup>, 2011 – December 31<sup>st</sup>, 2014. The set of comparable organizations that did not have merger or acquisition operate in similar sectors compared to the acquirers and have similar P/E ratio.<sup>4</sup> Furthermore, each one of the total 180 organizations has been listed on the New York Stock Exchange (NYSE).

## **4. Empirical results**

In the previous section, I briefly theoretically described the data I have collected for the research. However, in this section, I am going to illustrate and compare the empirical results throughout the financial crisis and non-crisis period. When conducting an event study analysis, the problems of autocorrelation and non-stationarity may occur. Thus, I would like to run two additional tests to ensure that my data is not affected.

---

<sup>4</sup> P/E is a comparative instrument, which provides better understanding of the correlation among firms, Salmanov et al., (2016).

Firstly, I will inspect for autocorrelation by conducting Durbin Watson test, which has a lowest value of 0 and a highest of 4. Test result of 2.00 indicates no autocorrelation. In this case, the Durbin-Watson d-statistic  $(2, 34143) = 2.00024$ . Hence, we can conclude that there is no autocorrelation. Secondly, I will perform a Dickey Fuller test to inspect for non-stationarity. When performing a Dickey Fuller, the test statistic must be smaller than the 5% critical value to conclude that our variable is stationarity. Based on the results, we see that the Test statistic equals to  $(-348.550)$  for all companies combined and the 5% critical value equals to  $(-2.860)$ . Hence, based on the Dickey Fuller test results, we confirm that our dataset is not affected from non-stationarity problem as the Test statistic is smaller than the 5% critical value  $(-348.550 < -2.860)$  for all firms taken together.

#### 4.1. Counterfactual

In the following sub-section, I will estimate the counterfactual or what the stock price would have been without any event (merger or acquisition). I have calculated the daily stock returns for all comparable companies that did not have M&A throughout the financial crisis period and non-crisis period and then the average is obtained as shown below. Table 1 and Table 1a represents what the stock returns would have been in terms of percentage separately for all companies that did not have M&A for the period 2007-2010 and in the non-crisis period, respectively. By looking at Table 1 and Table 1a, we can observe that the stock prices would have been quite similar, resulting at 0.0022164 (0.2%) and 0.0009001 (0.09%) throughout the financial crisis and in the period of financial stability, respectively.

Average estimation	Number of observations = 30,209			
	Mean	Std.Err.	[95% Conf. Interval]	
Combined	.0022164	.0009132	.0004265	.0040062

Table 1: Counterfactual 2007-2010 financial crisis period

Average estimation	Number of observations = 59,667			
	Mean	Std.Err.	[95% Conf. Interval]	
Combined	.0009001	.0002106	.0004873	.0013128

Table 1a: Counterfactual non-crisis period

## 4.2. Abnormal returns

This sub-section I will present the results for the abnormal returns for all organizations that have been involved in merger or acquisition during the economic crisis and in the non-crisis time in more details. From Table 2 and Table 2a, we can see that the mean of all abnormal returns during the financial crisis of 2007-2010 and in the non-crisis period equals to nearly zero ( $2.73e-12$ ) and ( $2.02e-11$ ). This is, however, an indication that the model used to calculate what the stock price would have been, fits quite well, because if the average of the abnormal returns were positive or negative, that would mean that the stock market would have been over/under performed.

Variable	Observations	Mean	Std. Dev.	Min	Max
AR	30,091	$2.73e-12$	.1541933	-1.126964	21.54081

Table 2: AR between 2007-2010

Variable	Observations	Mean	Std. Dev.	Min	Max
AR	91,187	$2.02e-11$	.4769447	-1.036537	141.0172

Table 2a: AR between in a time of non-crisis

As already established that on average, abnormal returns would be roughly zero, the next step is to estimate to what extent they differ from zero in the period three days before and three days after the M&A announcement. The reason for choosing exactly three days before and after the announcement is simply because if a longer period had been taken, another important events may have disentangled the influence of M&A announcement. Therefore, a t-test will be performed and shown below for both periods.

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
AR	90	-.0021758	.0020369	.0193234	-.006223	.0018714
Mean = mean(AR)					t= -1.0682	
H0: mean = 0					degree of freedom = 89	
Ha: mean < 0		Ha: mean != 0		Ha: mean > 0		
Pr(T < t) = 0.1442		Pr(  T   >   t  ) = 0.2883		Pr(T > t) = 0.8558		

Table 3: T-test for 3 days before M&A announcement (2007-2010)

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
AR	177	-.000832	.00134421	.0178552	-.0034806	.0018166
Mean = mean(AR)					t= -0.6199	
H0: mean = 0					degree of freedom = 176	
Ha: mean < 0		Ha: mean != 0		Ha: mean > 0		
Pr(T < t) = 0.2681		Pr(  T   >   t  ) = 0.5361		Pr(T > t) = 0.7319		

Table 3a: T-test for 3 days before the M&A announcement in a period of financial stability

In this analysis, the Null hypothesis states that abnormal returns do not significantly differ from zero. However, as Table 3 clearly shows that the significance level of the mean=0 is 0.2883. In this case, the null hypothesis is failed to be rejected as  $0.2883 > 0.05$  and therefore, we can conclude that three days before the merger or acquisition announcement between January 1<sup>st</sup>, 2007 – December 31<sup>st</sup>, 2010, abnormal returns do not significantly distinct than zero. On the other hand, in the period of non-economic crisis, we observe that three days in advance to the M&A announcement the significance level of the mean being zero is high (0.5361) (see Table 3a). Therefore, the null hypothesis is failed to be rejected and we can presume with roughly 53% certainty that abnormal returns three days before the M&A announcement do not significantly differ from zero for the period that does not include the financial crisis.

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
AR	90	-.0051512	.002319	.0219999	-.009759	-.0005435
Mean = mean(AR)					t= -2.2213	
H0: mean = 0					degree of freedom = 89	
Ha: mean < 0		Ha: mean != 0		Ha: mean > 0		
Pr(T < t) = 0.0144		Pr(  T   >   t  ) = 0.0289		Pr(T > t) = 0.9856		

Table 4: T-test 3 days after the M&A announcement (2007-2010).

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
AR	177	-.0000792	.0014918	.0198472	-.0030233	.0028649
Mean = mean(AR)					t= -0.0531	
H0: mean = 0					degree of freedom = 176	
Ha: mean < 0		Ha: mean != 0		Ha: mean > 0		
Pr(T < t) = 0.4789		Pr(  T   >   t  ) = 0.9577		Pr(T > t) = 0.5211		

Table 4a: T-test for 3 days after the M&A announcement in the non-crisis period

The next step is to test whether abnormal returns three days following the merger or acquisition announcement differ from zero. Table 4 presents the results for the period between 2007-2010. It is clearly shown the possibility that the abnormal returns to equal to zero is nearly 3%. Thus, we reject the null hypothesis as  $0.0289 < 0.05$ . Therefore, we can conclude that three days after the M&A announcement in a period of economic crisis, abnormal returns are significantly different than zero

On the other hand, Table 4a demonstrates that there is nearly 96% (0.9577) probability of excessive returns being equal to zero (see Table 4a). Therefore, distinctive to the results shown during times of crisis the null hypothesis is failed to be rejected and conclude that abnormal returns are not different than zero three days after the M&A announcement.



### 4.3. Cumulative abnormal returns

From Table 5 and Table 5a, we can see that the cumulative abnormal returns three days before the M&A announcement in a period of financial instability and financial stability, respectively. We observe negative cumulative abnormal returns of 19% in times of an economic crisis and negative cumulative abnormal returns of 14.7% in the period of financial stability.

Total estimation		Number of observations = 90		
	Total	Std. Err.	[95% Conf. Interval]	
AR	-.1958252	.1833178	-.8783114	-.1684234

Table 5: CARs 3 days before the M&A (2007-2010)

Total estimation		Number of observations = 177		
	Total	Std. Err.	[95% Conf. Interval]	
AR	-.1472646	.2375484	-.6160746	.3215454

Table 5a: CARs 3 days before the M&A in non-crisis time

In the three days interval following the merger or acquisition announcement, we notice different results as shown in Table 6 and Table 6a below. It is visible that for both timeframes, the total of all abnormal returns are negative, resulting at -46% between 2007-2010 and -1% in the period of non-crisis. As expected, we observe that the CARs, three days after the M&A announcement, throughout times of financial crisis are significantly more negative (-46%) compared to the non-crisis period (-1%). However, interestingly, we also notice that the cumulative abnormal returns three days after the M&A announcement are once again significantly more negative in comparison with the CARs, three days before the M&A announcement for the same period (-19%).

Total estimation	Number of observations = 90			
	Total	Std. Err.	[95% Conf. Interval]	
AR	-.463611	.2087091	-.8783114	-.0489106

Table 6: CARs 3 days after the M&A announcement (2007-2010)

Total estimation	Number of observations = 177			
	Total	Std. Err.	[95% Conf. Interval]	
AR	-.0140155	.2640492	-.5351256	.5070947

Table 6a: CARs 3 days after the M&A announcement in non-crisis period

## 5. Analysis

As it may have not been expected during the financial crisis between 2007-2010, the probability of having positive abnormal returns was computed at 85.5 percent, shortly prior to the announcement (see Table 3) and at 98.5 percent shortly after the merger or acquisition announcement (see Table 4). Based on those results, I can conclude that H1 of this paper holds. This could be explained by the fact that throughout the financial crisis, all organizations that were willing to engage in merger or acquisition were extremely cautious and completed deals that they were certain that they will be profitable. However, another possible explanation is that the merger or acquisition was not expected and as a result, the market went over enthusiastic and therefore, generated positive abnormal returns. In addition, above findings are in line with the papers of Nguyen (2015) that during the financial crisis, there were more possibilities to acquire a competing firm at lower price due to the increased risk of bankruptcy and lower competition and thus, generate positive abnormal returns. In addition, above numbers also support the findings of Beltratti & Paladino (2013) that in times of an economic distress, M&A attempt, gives rise to financial stability towards investors and therefore generate positive excessive returns. On the other hand, in the non-crisis period, the probability of having positive abnormal returns three days before the M&A announcement is comparable to the crisis period but slightly lower and results at 73.19%. (see Table 3a). This outcome seems appropriate and agrees with the conclusion of Aditya et al. (2014), because there might have been leakage of inside information with regards to the merger or acquisition and stock market analysts adjusted

this information in their forecasts. With regards to abnormal returns, three days after the M&A announcement in a period of financial stability, we observe nearly 96 percent certainty of abnormal returns being equal to zero. These results are in contrary with the crisis period where we observed 98.5 percent probability of having positive abnormal returns, which leads to rejection of the second hypothesis of this paper. This is however, in check with the conclusion of Rao-Nicholson et al., (2016) that in times of financial crisis, the incorporation of the merged or acquired companies is easier due to the fact that acquirers pursue mostly friendly mergers and acquisitions in times of financial distress.

With regards to the cumulative abnormal returns, and established on the results shown in Tables 5, 5a, 6, 6a, I have found evidence in support of H4, which is also in contrary of H3 of this paper. As it could be seen, we observe negative results three days prior to the M&A announcement for both timeframes – during the financial crisis and in the non-crisis times (see Table 5 and Table 5a). I assume that during the financial crisis, a substantial part of the U.S. based firms were undervalued due to the worsen economic circumstances and that led to more negative cumulative abnormal returns in comparison with the non-crisis period. Furthermore, three days after the announcement in times of non-crisis, we observe insignificant result of -1% (see Table 6a). Generally, shortly after a merger or acquisition most of the companies underperform, and hence, that leads to lower stock prices of the acquiring companies and it leads to negative cumulative abnormal returns because it takes time for both organizations to integrate and start being profitable. However, in times of financial crisis we observe a significant negative result of -46% (see Table 6). This result, however, has been expected and supports the findings of Alessandri et al., (2014), which concluded that during the financial crisis, mostly local deals were happening, which prompted firms to engage in high-risk mergers and acquisitions, which resulted in underperformance and negative cumulative abnormal returns.

## **6. Conclusion**

This paper has been focused on explaining and comparing the influence of M&A announcement on the acquirer's stock price in time of a crisis and in a non-crisis period. The impact of such an announcement could result from different aspects. For example, the positive influence might be a consequence of the industry both involved companies operate in as suggested by Mishra (2018). However, as shown in the result section, throughout the economic meltdown, we saw quite significant negative influence shortly prior and after to the announcement. Therefore, I

would presume that during times of crisis, engaging in merger or acquisition hold the risk of big losses because of the disrupted financial market and liquidity problems that many organizations were facing during the crisis. On the other hand, in the non-crisis period, we observed still negative outcome but close to zero, shortly after the M&A announcement. Hence, the impact of M&A announcement is less noticeable.

This thesis has been limited to only mergers and acquisitions. Regardless of the big influence mergers and acquisitions have, many other aspects are also dominant, such as stock split, dividend announcements or earnings announcements. Therefore, it would be interesting for a further research to see what the impact of stock split, dividend announcement or earnings announcement on the stock price would be, compared to mergers and acquisitions.

## 7. Bibliography

- Adnan, A. T. M., Hossain, A., Adnan, A., & Hossain, A. (2016). Impact of M&A announcement on acquiring and target firm's stock price: An event analysis approach. *International Journal of Finance and Accounting*, 5(5), 228-232.
- Agrawal, A., Jaffe, J. F., & Mandelker, G. N. (1992). The post-merger performance of acquiring firms: a re-examination of an anomaly. *The Journal of finance*, 47(4), 1605-1621.
- Akben-Selcuk, E., & Altiok-Yilmaz, A. (2011). The impact of mergers and acquisitions on acquirer performance: Evidence from Turkey. *Business and Economics Journal*, 22, 1-8.
- Alexandridis, G., Antypas, N., & Travlos, N. (2017). Value creation from M&As: New evidence. *Journal of Corporate Finance*, 45, 632-650.
- Alessandri, T., Cerrato, D., & Depperu, D. (2014). Organizational slack, experience, and acquisition behavior across varying economic environments. *Management Decision*.
- Alexandridis, G., Petmezas, D., & Travlos, N. G. (2010). Gains from mergers and acquisitions around the world: New evidence. *Financial Management*, 39(4), 1671-1695.
- Amewu, G. (2014). Implication of mergers and acquisitions on stock returns before and during the 2007-2009 credit crunch: An event study. *African Review of Economics and Finance*, 6(1), 102-119.
- Asquith, P. (1983). Merger bids, uncertainty, and stockholder returns. *Journal of Financial Economics*, 11(1-4), 51-83.
- Beltratti, A., & Paladino, G. (2013). Is M&A different during a crisis? Evidence from the European banking sector. *Journal of Banking & Finance*, 37(12), 5394-5405.
- Bouwman, C., Fuller, K., & Nain, A. (2003). The performance of stock-price driven acquisitions. *Social Science Research Network*, [www.ssrn.com](http://www.ssrn.com).
- Bhaumik, S. K., & Selarka, E. (2008). Impact of M&A on firm performance in India: Implications for concentration of ownership and insider entrenchment.
- Cartwright, S. (2002). Why mergers fail and how to prevent it. *Business: The Ultimate Resource*.

- Corrado, C. J., & Zivney, T. L. (1992). The specification and power of the sign test in event study hypothesis tests using daily stock returns. *Journal of Financial and Quantitative analysis*, 27(3), 465-478.
- Drymbetas, E., & Kyriazopoulos, G. (2014). Short-term stock price behaviour around European cross-border bank M&As. *Journal of Applied Finance and Banking*, 4(3), 47.
- Franks, J., Harris, R., & Titman, S. (1991). The postmerger share-price performance of acquiring firms. *Journal of Financial economics*, 29(1), 81-96.
- Gates, S., & Very, P. (2003). Measuring performance during M&A integration. *Long Range Planning*, 36(2), 167-185.
- Gugler, K., Mueller, D. C., Yurtoglu, B. B., & Zulehner, C. (2003). The effects of mergers: an international comparison. *International journal of industrial organization*, 21(5), 625-653.
- Grave, K., Vardiabasis, D., & Yavas, B. (2012). The global financial crisis and M&A. *International Journal of Business and Management*, 7(11), 56.
- Hitt, M. A., Harrison, J. S., & Ireland, R. D. (2001). *Mergers & acquisitions: A guide to creating value for stakeholders*. Oxford University Press.
- Hitt, M. A., King, D., Krishnan, H., Makri, M., Schijven, M., Shimizu, K., & Zhu, H. (2009). *Mergers and acquisitions: Overcoming pitfalls, building synergy, and creating value*. Business Horizons.
- Khanal, A. R., Mishra, A. K., & Mottaleb, K. A. (2014). Impact of mergers and acquisitions on stock prices: The US ethanol-based biofuel industry. *biomass and bioenergy*, 61, 138-145.
- King, D. R., Slotegraaf, R. J., & Kesner, I. (2008). Performance implications of firm resource interactions in the acquisition of R&D-intensive firms. *Organization science*, 19(2), 327-340.
- Kyprianides, G. P. (2012). Assess the importance of the counterfactual in merger assessment with regards to the failing firm defence. *ECLR*, 33(12), 576-582.
- Liang, C. (2013). The impact of merger and acquisition announcements on firms' stock performance: evidence from Hong Kong stock market.
- Lin, H. C., Chou, T. K., & Cheng, J. C. (2011). Does market misvaluation drive post-acquisition underperformance in stock deals?. *International Review of Economics & Finance*, 20(4), 690-706.

- Luan, C. J., Tien, C., & Chi, Y. C. (2013). Downsizing to the wrong size? A study of the impact of downsizing on firm performance during an economic downturn. *The International Journal of Human Resource Management*, 24(7), 1519-1535.
- Ma, J., Pagan, J. A., & Chu, Y. (2009). Abnormal Returns to Mergers and Acquisitions in Ten Asian Stock Markets. *International Journal of business*, 14(3).
- Ma, Q., Zhang, W., & Chowdhury, N. (2011). Stock performance of firms acquiring listed and unlisted lodging assets. *Cornell Hospitality Quarterly*, 52(3), 291-301.
- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of economic literature*, 35(1), 13-39.
- Malmendier, U., & Tate, G. (2015). Behavioral CEOs: The role of managerial overconfidence. *Journal of Economic Perspectives*, 29(4), 37-60.
- Mishra, P. (2018). Effect of M&A announcement on acquirer stock prices in the Pharmaceutical sector and the role of bid premium.
- Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. *Journal of financial economics*, 20, 293-315.
- Morck, R., Shleifer, A., & Vishny, R. W. (1990). Do managerial objectives drive bad acquisitions?. *The Journal of Finance*, 45(1), 31-48.
- Motis, J. (2007). Mergers and acquisitions motives. Toulouse School of Economics EHESS (GREMAQ) and University of Crete. Retrieved from economics. soc. uoc. gr/wpa/docs/paper2mottis. pdf.
- Nguyen, X. (2015). Financial crisis and M&A in vertical markets: Some theoretical considerations.
- Oduro, I. M., & Agyei, S. K. (2013). Mergers & acquisition and firm performance: Evidence from the Ghana Stock Exchange. *Research Journal of Finance and Accounting*, 4(7), 99-107.
- Petitt, B. S., & Ferris, K. R. (2013). *Valuation for Mergers and Acquisitions: Valuation\_2*. FT Press.
- Rao-Nicholson, R., Salaber, J., & Cao, T. H. (2016). Long-term performance of mergers and acquisitions in ASEAN countries. *Research in International Business and Finance*, 36, 373-387.
- Roese, N. J. (1997). Counterfactual thinking. *Psychological bulletin*, 121(1), 133.
- Salmanov, O., Babina, N., Bashirova, S., Samoshkina, M., & Bashirov, R. (2016). The Importance of the Country's GDP in the Evaluation of Companies Using Multiples on the European Stock Market. *Regional and Sectoral Economic Studies*, 16, 1.

- Siddharthan, N. S., & Narayanan, K. (Eds.). (2016). *Technology: Corporate and Social Dimensions*. Springer.
- Stickel, S. E. (1995). The anatomy of the performance of buy and sell recommendations. *Financial Analysts Journal*, 51(5), 25-39.
- Stunda, R. (2014). The market impact of mergers and acquisitions on acquiring firms in the US. *Journal of Accounting and Taxation*, 6(2), 30.
- ȚILICĂ, E., OPREA, D., & CIOBANU, R. (2012). The Impact of M&A Announcements on Stock Prices. *AMIS 2012*, 767.
- Trichterborn, A., Zu Knyphausen-Aufseß, D., & Schweizer, L. (2016). How to improve acquisition performance: The role of a dedicated M&A function, M&A learning process, and M&A capability. *Strategic Management Journal*, 37(4), 763-773.
- van Schaik, D., & Steenbeek, O. W. (2004). Price and volume effects of merger bids in Japan. Available at SSRN 592081.
- Woon, W. S. (2004). Introduction to the event study methodology. *Singapore Management University*, 4(7).
- Yeh, T. M., & Hoshino, Y. (2002). Productivity and operating performance of Japanese merging firms: Keiretsu-related and independent mergers. *Japan and the World Economy*, 14(3), 347-366.



