Master Thesis

The Signalling Effect of M&A Announcements on Performance

Findings on the signalling effects of M&A announcements given the moderating effect of payment method, reputation and experience on performance of acquiring companies

Master Corporate Finance & Control

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Abstract

This thesis investigates if and to what extent announcements of mergers and acquisitions act as a signal to the market, thereby influencing the short-term performance of acquiring companies. Also the effects of the method of payment, the experience of the acquirer and the reputation of the target is analyzed as they can either enhance or diminish the effects of the announcement as a signal. Due to the inherent uncertainty of the M&A landscape due to information asymmetry, investors rely on observable characteristics to evaluate a company. The assumption here is that the announcement provides a particular signal to the market about the quality of the venture.

Where previous studies describe the effects of signals, there is little empirical evidence on the effects of an M&A announcement as a signal. This thesis tries to combine signalling theory with the stream of literature on M&A performance. This thesis also contributes to the stream of literature by analyzing under what circumstances or preconditions, signal are received that either improved or worsened the effect of M&A announcements on acquirer performance.

Using a sample of 85 transactions in Europe over the period of 2017 to 2019, no significant results were found when looking at the performance enhancing or diminishing effect of announcements. Moreover, an additional multiple regression analysis showed no significant moderating effects for the method of payment, the experience of the acquirer or the reputation of the target. Thus, the effect of a M&A announcement as a signal is somewhat limited, and that acquiring companies should not extensively concern themselves with the preconditions of signals surrounding M&A's. This study contributes to the stream of literature on signalling theory, and especially on its relation with M&A events. Implications and directions for future research are provided.

Keywords: M&A, Acquirer Performance, Reputation, Signalling

Table of Contents

1. Introduction	4
2. Theoretical framework	7
2.1 M&A performance	7
2.2 Signaling theory	8
2.2.2 Mode of payment	10
2.2.3 Reputation	11
2.2.4 Acquirer experience	12
2.3 Conceptual model:	13
3. Methodology	14
3.1 Research method	14
3.2 Measuring constructs – Event Study	16
3.2.1 Time parameters identification	16
3.2.2 Normal return calculation	17
3.2.3 Abnormal return calculation and analysis	
3.3 Measuring constructs – Multiple Regression	
3.4 Sample	
4. Results	
4.1 Event study	
4.2 Correlation analysis	23
4.3 Regression analysis	
5. Discussion	
5.1 Theoretical implications	
5.2 Practical implications	
5.3 Limitations and future directions	
5.4 Conclusion	
References	
Appendix	

1. Introduction

In order for efficient trade to take, all parties involved should have the same information and equal availability to it. The price in this case fully reflects the value that it actually represents, leaving no room for misinterpretation or error. However, this situation is rarely present in practice, with buyer and seller having a mismatch in available information. Often the seller withholds information leaving the buyer at risk to adverse selection, or overpayment risk. The buyer however has no other option than to deal with this adverse selection problem, or cancel the deal. This situation is also not profitable with regard to the seller side as price discounting occurs by buying (Wu, Reuer & Ragozzino, 2013).

The information problem described above is thoroughly researched in practice, with the M&A context offering an interesting research landscape for economics, finance, and strategy literatures. Often involving a great deal of resources, M&As provide companies with the opportunity to deploy their own assets to exploit external growth opportunities. However, in the transaction process of M&A there is information asymmetry between the buying and selling side. After thorough valuation processes, which often involves a lot of intangible assets, the buying side turns to a due diligence process just to make sure that they value the company for what it is actually worth. Especially for private companies, which have fewer obligations to provide information to the market in contrast to public companies, the valuation process can be very lengthy and difficult. Overall, M&A transactions are not that efficient due to this information asymmetry problem (Wu & Reuer, 2021).

Originally being a theory related to human capital (Spence, 1973), signalling theory has moved beyond the scope of human capital, and entered management literature, where it also is applied to M&A related literature (Riley, 2001). In M&As the effectiveness of signals can reduce the adverse selection. For example signals can reduce costs of buyers as they signal the quality of good potential sellers (Pollock & Gulati, 2007), or signals can reduce the offer price discounting that would arise from asymmetric information between sellers and buyers (Reuer, Tong & Wu, 2012). Moreover, it can even be the signal of hiring a management consultant that improves the value of a company significantly (Bergh & Gibbons, 2011). Signalling theory therefore can provide a solution to the adverse selection problem and information asymmetry that is described above.

One important factor that has been the topic of much event-study related research in the realm of M&A literature, is the announcements of M&As. Most studies on mergers and

acquisitions reveal mixed results concerning abnormal return during announcements periods. In this study, I propose that the announcement of an M&A can provide a signal of the profitability and future prospect to the market, to which it affects the short-term performance of the acquiring company, which is also touched upon in recent literature (Bessler, Drobetz & Zimmerman, 2011; Colombo, 2021; Yang & Lander, 2018;). These announcement signals are beneficial to investors as they often do not have access to direct information, and therefore rely on observable characteristics or signals.

The extent to which performance is affected depends upon multiple factors, including the method of payment used, the target reputation and acquirer experience. Previous studies find that the method of payment chosen by the acquirer has an negative impact on the announcement returns when funded with equity and a positive effect when funded through cash (Bessler, Kruizinga & Westerman, 2020). The reputation of the target is important as information asymmetry is less severe in these cases as the company has proven to others that it provides a profitable investment (Colombo, 2021). Also, more experienced acquirers tend to focus more on their own skills and therefore rely less on upon signals of performance (Wu & Reuer, 2021). This results in several questions that are central to this study:

Research question:

• To what extent do M&A announcements, through signal, affect short term performance of the acquiring company?

Sub questions include:

- What is the moderating effect of the payment method used on acquirer performance?
- What is the moderating effect of target reputation on acquirer performance?
- What is the moderating effect of acquirer experience on performance?

This study offers two primary theoretical contributions. First, this study tries to combine the stream of literature related to M&A performance to signalling theory to further explore the effectiveness of signals that signals can have on their receivers, something that has been called upon in recent literature (e.g. Connelly et al., 2011; Park & Patel, 2015; Wu & Reuer, 2021). Analyzing a sample of 85 transactions in Europe over the period of 2017 to 2019, this study showed that the performance that there is no significant effect announcements as a signal on the short term performance the acquiring company.

Second, I furthermore analyze signals by looking into important factors that could influence the perception of their receivers, which is also highlighted by previous research (e.g. Colombo, 2021). I find that combining the method of payment, the experience of the acquirer and the reputation of the target in one overarching model did not show any significant results.

For practitioners, findings of this thesis could help managers in determining the best way to go about when dealing with signals in potential M&A deals. Although targets' signals are publicly available to all prospective acquirers, not all acquirers will naturally perceive and act on them (Pollock & Gulati, 2007).

This thesis consists of five chapters. Chapter two outlines the theoretical framework (§2) where chapter three describes the methodology (§3). In chapter four the quantitative analysis of the data and the findings of the analysis is described (§4) and finally, in chapter five, the research findings, its implications, limitations, future research directions and the conclusions are outlined (§5).

2. Theoretical framework

This chapter first elaborates on the stream of literature surrounding M&A and M&A performance (§2.1). The possible effects that signals can have are then touched upon in the next section (§2.2). I then also turn to the potential signaling effects of the mode of payment in M&A announcements (§2.2.2). I also elaborate upon the reputational effects of announcements (§2.2.3) followed by the effects of the experience of the acquirer (§2.2.4).

2.1 M&A performance

The performance of mergers and acquisitions provides an interesting field of study, which has been dealt with extensively over the past few decades. Although one of the most studied fields of research, the academic community is divided on whether M&As provide real benefits to acquiring firms with it being a favorite growth strategy for businesses across the globe. A surprising and quite shocking 44 to 50 percent of the M&As do fail, with a large stream of literature proposing that M&As do not pay off (Cartwright & Schoenberg, 2006; Das & Kapil, 2012). Some research however point out that there are unidentified variables that might play a big role in explaining the variance in acquisition performance (Das & Kapil, 2012), or that there are problems with empirically measuring acquisition performance as it is a complex phenomenon (Zollo & Meier, 2008). Furthermore, there is research which is actually in favor of the effectiveness and profitability of M&As as shareholders and companies can benefit from M&As. Empirical studies show that they often increase market share and market power, provide economics of scale and scope, lower cost of capital, and alleviate redundant corporate costs (Ross, Westerfield & Jordan 2009; Ma, Zhang & Chowdhury, 2011). Overall, the literature on M&A performance seems divided.

The performance in M&As can be affected in many ways. Common determinants of acquirer performance in M&As are for example pre-acquisition performance and proportion of the state shares has a positive impact on performance of acquiring companies (Changqi & Ningling, 2010). Acquirer size and political connections can also be determinants for good M&A performance (Colombo, 2021). If an acquisition is made by diversifying geographically, the shareholder value and long term performance is increased (Doukas & Lang, 2003). Industry related variables such as industry growth opportunity, industry concentration and cash flows are important determinants of merger activity as well (Agrawal & Sensarma, 2007).

Certain events can also be a determining factor for performance of companies. Such events are earnings announcements, dividend announcements, and in case of this thesis it can also be M&A announcements. M&A announcements are extensively examined as well in research surrounding deals. When M&A's are announced, which is different from the deal actually be completed, this is reflected in the stock price of the acquiring company. The extent to which announcements impact acquirer performance seem to be divided, just as the overall discussion about the effectiveness of M&A's, with research showing positive and negative results (e.g. Bao & Edmans, 2011; Yang & Lander, 2018; Zhao, Ma & Hao, 2019; Wu & Reuer, 2021). The relation between announcements and acquirer performance has been further explored with regard to other moderating variables. For example acquirer size plays a significant negative role on announcement returns (Zhao, Ma & Hao, 2019).

Investigating events such as the announcement of an M&A is relevant as they can be beneficial to companies in terms of influencing their stock price in both the short and long run. This effect on the stock price ultimately also influences performance of the acquiring company. Determining under what circumstances these events actually are beneficial to the acquiring company is therefore an interesting field of research. I will now argue on how signalling theory can be a theoretical framework for further examining M&A announcements as signals can provide a vehicle to communicate future prospects and companies potential to the market.

2.2 Signaling theory¹

Traditionally signaling theory stems from work in social capital (Connelly et al., 2011; Spence, 1973). The work of Spence (1973) has added additional insights to the information asymmetry problem. In his article, Spence argues that education can function as a signal of an employee's productivity, as education is costly and is positively related to an individual's unobservable productive potential. This causes more productive recruits to signal their value to employees by earning an education and stand out with regard to the other potential employees. In general, an action qualifies as a signal and helps differentiate a seller's product or resource when (1) the action is readily observable to other market participants, (2) the action is positively related to the unobserved quality of the product or resource being transacted, and (3) it is more costly for other sellers lacking the same quality level to imitate

¹ This section is partially based on Luijkx (2020), where an overview of the signalling theory was also given

the action (Bergh, Connelly, Ketchen, & Shannon, 2014; Spence, 1974). Over the last few years, signalling theory has moved beyond the scope of human capital, and entered management literature, where it also is applied to M&A related literature.

In the M&A landscape, signalling theory essentially builds on the idea that when there is a lot of information asymmetry in the market, there is a distinction between high quality and low quality senders. This distinction originates from the fact that signals are costly and therefore only a subset of senders can transmit signals due to costs associated with sending these signals (Bergh et al., 2014). Entrepreneurial companies and mature companies alike aim to convince or persuade investors of the merits of their firm. In other words, the decision of an investor to invest is dependent on what the funding receivers consider the basis of the judgment and what constitutes relevant evidence for consideration (Chen, Yao, & Kotha, 2009). This evidence is being sent in the form of these costly signals by the companies as described above. These signals are beneficial to investors as they often do not have access to direct information, and therefore rely on observable characteristics or signals (Kaplan & Stromberg, 2003). A signal related to quality can overcome or reduce the information asymmetry which is inherently present in deals surrounding M&As (Amit, Brander, & Zott, 1998; Li & Chi, 2013), which helps investors in mitigating adverse selection or overpaying for the target (Ragozzino & Reuer, 2007).

In the previous section was mentioned that determining under what circumstances events, or M&A announcements more specially, is relevant as it can have a performance enhancing effect. Signalling theory provides a theoretical framework for answering this question as it proposes the announcement of the M&A, the signal in this case, as a communication vehicle that the acquiring company can use in order to influence their stock price, and therefore their performance. The extent to which the announcement of an M&A influences performance has been thoroughly researched, with performance being measured in multiple ways (for a meta-analysis see Zollo, 2008).

The announcement of an M&A provides a signal about the future prospects of an acquirer and influences the value accordingly. Related research for example shows how simply being in the news as a company can positively impact acquirer performance in the short run (Yang & Lander, 2018). Similar findings also suggest that investment banks have a significant effect on M&A announcements and the returns of M&A deals following those (Bao & Edmans, 2011). Moreover, when an acquisition is announced, it signals the potential for future growth in the acquirer's industry to the market, resulting in positive stock market

reactions to rivals of the acquiring firms (Gaur, Malhotra & Zhu, 2013). A meta-analysis by Yasar, Martin and Kiessling (2020) receivers do react to positive signals from a credible insider signaler to obviate information asymmetry, and also show that receivers react much stronger to negative signals. Overall, related literature seems fairly convinced about the significant effect an announcement as a signal can have on performance. Following the lines of communicating performance to investors with regard to signalling theory, the signalling of information should affect future performance positively resulting in the following hypothesis:

Hypothesis 1: The announcements of an M&A has a positive effect on the performance of the acquiring firm.

2.2.2 Mode of payment

There are however, some influencing factors that could be of interest when considering the announcement of an M&A as a signal. These signals could either enhance or dimmish the effect of the signal that is being sent, as it influences the way that the signal is perceived by its receivers.

The first factor that is of interest is the mode of payment that an acquiring company chooses to use. The most commonly used methods of payment are full cash, full share-exchange or a combination of both. As a result of information asymmetry, firms acquire targets through equity if they believe that their firms' shares are overvalued however if they know that the firms' shares are undervalued they prefer cash offers when acquiring target instead (Leland & Pyle, 1977; Myers & Majluf, 1984). Therefore, the method of payment can act as a signal about the acquiring firm's value with cash offers being interpreted as good news while equity offers are interpreted as bad news. Consequently, cash offer M&A proposals should trigger positive market reaction while share offer M&A proposals are expected to have a negative market reaction impact on the acquiring firm's share price. Overall, cash offers acquisitions should generate more abnormal return than equity offer acquisitions (Bessler, Kruizinga & Westerman, 2020).

Hypothesis 2a: If the method of payment is focused on cash, this has a positively moderating effect on the relation between announcements and performance

Hypothesis 2b: If the method of payment is focused on equity, this has a negatively moderating effect on the relation between announcements and performance

2.2.3 Reputation

Corporate reputation affects the corporate value, performance, and risk of firms, so their reputation may be considered as a strategic intangible asset (Veh, Göbel & Vogel, 2019). If the target company already has been funded in multiple rounds, and is backed by multiple companies and investors, it is considered to have a good reputation. The information asymmetry is less severe in these cases as the company has proven to others that it provides a profitable investment, thereby reducing the extent to which new investors should rely on signals about performance to overcome the information asymmetry (Colombo, 2021). Political connections, for example, are related to target reputation and previous research has shown a positive effect on mergers and acquisitions announcement returns (Zhao, Ma & Hao, 2019). When firms with reputation that is considered good send out signals to the market, these are considered to be more trustworthy and realistic to their receiver, which in turn causes these receivers to act more on these signals.

Besides that, research has shown that forming alliances with poor quality ventures will present more risk to well-established firms' accumulated reputations, therefore more prominent alliance partners tend to ally with higher quality ventures (Gulati & Higgins, 2003). Acquirers will be inclined to seek out targets who signal a better reputation than their peers as these companies pose less risk to the acquirers reputation, thereby increasing their short term performance more often. Similarly, recent research has shown that acquirers can rely on signals coming from the affiliation that a company has to gauge the venture's resources and future prospects (Wu & Reuer, 2021). This results in the following hypothesis:

Hypothesis 3: The reputation of the target company has a positive moderating effect on the relationship between M&A announcements and performance

2.2.4 Acquirer experience

Acquisitions are complex events that fail for numerous reasons. Some of these possible reasons might be that acquiring firms may select the wrong target, pay too much for it and poorly integrate it (Colombo, 2021). It might also explain why acquisitions yield inadequate returns for acquiring firms. Acquisition experience is described as a "principal mechanism by which firms attain extraordinary skills" (Hayward, 2002). There is however mixed evidence that acquirer experience is sufficient to ensure superior acquisition performance (e.g. Zollo & Singh, 2000). Research shows how acquirer's general M&A experience makes it more likely to act on signals and learning from prior experience in acquisitions might help enhance acquisition performance (Barkema & Schijven, 2008).

However, although targets' signals are publicly available to all prospective acquirers, not all acquirers will naturally perceive and act on them (Pollock & Gulati, 2007). Moreover, meta-analysis has not found a consistent and significant effect for acquisition experience (King, Dalton, Daily & Covin, 2004). Also, experienced acquiring companies tend to rely less on signals about performance, and rely more on their own experience in the field. (Wu & Reuer, 2021). Also, targets with a patent portfolio which has the potential to block other patents are of high value to the acquiring firm. So in the situation of the acquirer having a great deal of experience, in a certain field, may greatly positively impact the actual deal value (Grimpe & Hussinger, 2008). As the research is mixed the following hypothesis is constructed:

Hypothesis 4: The experience of the acquirer has a negative moderating effect on the relationship between M&A announcements and performance.

2.3 Conceptual model:

Based on the previous sections and its hypotheses the following conceptual model can be presented:



Figure 1 – conceptual model

3. Methodology

In this section, the methodological approach of this research is delineated and justified. First, the research method is described, as are the reasons for choosing this method (§3.1.). Second, it is explained how the constructs are going to be measured in relation to the event study (§3.2.) and the regression(§3.3). Finally, in this chapter the sample is presented (§3.4.).

3.1 Research method

The main research question is whether the M&A's affect the value of acquiring companies. Measurement of a company's value however is not easy when certain events occur over time To measure the performance of M&A, empirical researcher uses two studies mainly: one is accounting studies and another one is event studies. The post-operating performance of the M&A is investigated by the accounting studies. The post-operating performance for the long term period will be compared to the industry, size or performance with the benchmark of a group of non-acquired firms, but this approach has several limitations, some of them being that companies have different accounting rules and it is hard to measure the direct economic impact of M&A over a timeframe. (Adnan & Hossain, 2016). Besides that, measuring over a given timeframe would be difficult given the limited time and resources of writing a master thesis, as a certain group under investigation should be compared to a reference group, which would include data that is hard to come by.

Alternatively, in this thesis I will use an event study analysis, a common-used method in corporate finance and investment analysis that measures the change in stock price at the time when the event decision becomes public. A conventional event study methodology is used that measures cumulative abnormal returns (Haleblian & Finkelstein, 1999; Hayward, 2002; Sudarsanam & Mahate, 2006).

There are some different alternatives to choose from when considering event study related research. These alternatives mainly differ on how the abnormal returns are calculated, and these different calculations have developed over the year. The work of Mackinlay (1997) initially showed the number of different empirical models that have been employed in the literature to estimate abnormal performance around the event. These include the market model, market adjusted model and the mean adjusted model. The mean adjusted model is the simplest method used to predict a normal return is to simply subtract a security's time series average from an event date return. The most commonly used prediction method is the market model, where firm returns are regressed on a constant term and a market index. The market adjusted model subtracts the market index from an event date security return. Overall, the popularity of the market adjusted model has increased significantly over the years (Ahern, 2009). They involve no estimation process and no estimation period, making it a very helpful model for when there is no data prior to the event (Henderson, 1990), what surely has contributed the fact that is now the most used model in event study related research. Comparing the market model to the mean adjusted model, multiple comparison tests were conducted and it was found that the mean-adjusted returns model did not work as well as the market model (Henderson, 1990).

However, the mean adjusted model does not differ from the market adjusted model with regard to their returns displaying no significant mean bias (Ahern, 2009). Although perceived more simplistic than the other models, simulations indicate that the technique works relatively well, producing results that are comparable to the more complicated regression models (Brown & Warner, 1985). Similarly, researchers who use the market adjusted model need to choose a market index for their calculations and because the criteria for choosing these similar or related market indexes are not well defined, biases may arise (Ahern, 2009). For the mean adjusted model an estimation of the expected return is used in the model which is based on the previous performance of the company itself, therefore no such biases can arise (Mackinlay, 1997).

For this thesis, I will use the (comparison period) mean adjusted model. The main reason for this choice is that choosing related market indexes is hard as the dataset contains a wide range of different companies over different industries and countries, so in this way I prevent the bias described above. Moreover, I can easily access the past performance of the companies through the database, thereby making it easier and less time consuming to calculate the cumulative abnormal returns for all the companies in the sample.

The mean adjusted model is in line with the Capital Asset Pricing Model (CAPM), in that it assumes unsystematic, firm-specific risk to be zero and the systematic, market-specific risk is equal to one (Mackinlay, 1997). There is no difference between the anticipated expected return and the ex-post expected return. Resulting in the mean adjusted model being generated by the following process, with $E(\varepsilon_{nt})$ being equal to 0:

$$R_{nt} = E(R_{nt}) + \varepsilon_{nt}$$

This model will be used to analyze the main question in this thesis which is related to what the effects are of an M&A announcement on acquirer performance, in which the cumulative abnormal return (CAR) of the stocks is an important factor. In order to calculate the CAR of all the transactions under consideration, the daily stock returns, normalized returns and the abnormal returns for each of the stock will have to be calculated in this model. I will touch upon these calculation in a later stage.

Sequentially, after calculating the cumulative abnormal returns, the analysis will include a regression to take into account the potential effects of the other factors of this study. In order to analyze relation of this in the constructed sample, I will use a multiple regression analysis where the dependent variable is the calculate CAR of the stocks, where the independent variables being the method of payment, target reputation and acquirer experience.

3.2 Measuring constructs – Event Study

In this paragraph it is described how the construct in both the event study as well as the regression analysis is measured. Central to the event study is the calculation of the cumulative abnormal returns, which are also vital to the regression as it is the dependent variable in the analysis.

3.2.1 Time parameters identification

The first step in order to calculate the cumulative abnormal returns is to precisely identify when the actual event takes place. The event in this study is when mergers and acquisitions are announced, as this is the moment upon which the market would receive the new of the event. Shown in figure 2 below, I define the event date as t = 0. As the market gradually picks up the news of the announcements, I am interested in the period around the event date (t = 0). This period is called the event window indicated by [t1, t2]. Thus the test period is very small and gives an impression of the immediate effect caused by the announcement of the acquisition around the event.

According to Brown & Warner (1985) a parameter estimation period of 120 days is adequate since daily returns data for the 120 days prior to the event date are sufficient in formulating a benchmark for normal returns. The estimation period [T1, T2] is shown in the figure below.



Figure 2 – examined window

3.2.2 Normal return calculation

The normal return of a company is referred to as the stock return of that particular company. If a special event, such as an M&A, has not taken place in that company, an estimation of the normal return requires a definition of the estimation period and an event period. In this study the estimation window is 120 days and starts 130 days before the precise day of the event ([T1, T2] = [-130, -10]) with an event period of 10 days ([t1, t2] = [-5, 5]). The 5 day gap between the estimation window and event window is there in order to negate potential effects that the event window can have on the estimation window, for example insider trading. Each M&A deal in the dataset has its own estimation window and event window. To calculate the normal return of a stock, I first need to calculate the daily stock return. The daily stock return*R* is calculated using the stock prices*P*_t retrieved from the database with the following formula:

$$R = \frac{P_t - P_{t-1}}{P_{t-1}}$$

To calculate the normal return of a stock I use the mean-adjusted return model. The normal return NR_i is defined as the average return over the estimation period, where *i* is the stock index and T=T2-T1+1, which is equal to the number of days over the estimation window of that particular stock:

$$NR_i = \frac{1}{T} \sum_{s=T1}^{T2} R_{is}$$

3.2.3 Abnormal return calculation and analysis

Now the normal return of each stock is calculated, I need to compare it with the actual return that has taken place. This of course in order to determine the potential effects the event has had on one particular stock. The abnormal return $AR_{i,t}$ is the difference between the actual return and the normal return of stock *i* on day *t*, where $R_{i,t}$ is the actual return of stock *i* on day *t* and $NR_{i,t}$ is the normal return of stock *i* on day *t*:

$$AR_{i,t} = R_{i,t} - NR_{i,t}$$

For every company in this sample the abnormal return is calculated for each day over the entire observation period. After calculating the abnormal returns I aggregated these from period [t1, t2] as I am interested in the changes over event window period. These aggregated returns are the cumulative abnormal returns:

$$CAR_i = \sum_{t=t1}^{t=t2} AR_t$$

3.3 Measuring constructs – Multiple Regression

The valuation change of a company is represented by the abnormal return, as described earlier in this chapter. The different companies are described over a particular event period, therefore I use the cumulative abnormal returns over this event period as the quantitative representation of the valuation change of a company. To test the constructed hypotheses, the CARs are used as the dependent variable in this case, where the relationship with the moderator variables will be tested through a regression analysis.

Using a regression analysis allows for a statistical method to form a relationship between the dependent and independent variables as a model function. Again, in my research the dependent variable is the cumulative abnormal returns of the transactions in the dataset. The independent variables are the three factors of the payment method, target reputation and acquirer experience. The amount of funding rounds that a target company has been involved in is often used as a proxy for the reputation of targets in terms of their profitability (Amor & Kooli, 2020). Highly reputable targets have proven to be a good investment by others in previous rounds, making new investors less dependent on signals about their potential profitability.

As I am aware of the fact that the proxy proposed to measure the reputation of targets does not fully reflect the whole reputation of the targets only their financial reputation. Signalling related research often uses broader proxy's for reputation, such as the ESG index (Maung, Wilson & Yu, 2020). However, reputation in this study is confined only to the financial reputation of a company, which would make such indexes not useful. Furthermore, one could also argue for the use of credit ratings as a proxy for reputation. For most of the targets in the constructed dataset no information is available on such credit ratings, so I am condemned to use the amount of funding rounds in this study.

In measuring the acquirer experience, this thesis will follow research that has been done in the past on related topics. Acquirer experience is measured through the number of deals previously conducted by acquirer, which is a proxy that has been used in related research on signaling theory (e.g. Hayward, 2002; Wu & Reuer, 2021). To measure the acquiring firm's prior M&A experience it was determined whether the acquiring firm had previously completed a merger. The number of previous M&A's was obtained by looking at the company's previous years' records in the Capital IQ database. As the dataset contains only public companies information is available of the company. For some transactions there are several acquiring companies that each acquire a stake. Luckily, the Capital IQ database show what is called the 'lead investor' that initiates the deal and which is involved for the Largest percentage in the deal. Further the variableEXP_AcqTotalTransactions, a squared term of the number of previous M&A's, is used to examine the potential curvilinear relationship between experience and acquire performance.

The method of payment will be measured by which percentage of the deal that has been funded by either equity or cash. An option in the Capital IQ database exists where the percentage amount of cash consideration can be retrieved when constructing a dataset. As most of the transactions show either 100% of cash, equity or other constructions, I will use dummies in my analysis. One dummy will indicate a 1 if a deal is funded through cash and 0 otherwise. Another dummy will show a 1 if the deal is funded through equity. The group with other constructions or unknowns is set as the reference category.

For the control variables, I will first take into account the size of both the target and the acquirer in the model. The size of the target is measured by looking at the market cap, where the size of the target is measured by looking at the amount of employees of the company at the time of the acquisition. The reason for choosing different measures for size between acquirer and target has to do with data availability, as less information is available on the market cap of target in the database. I also include a variable that indicates whether the acquirer is related to the industry of the target. Business relatedness is measured by looking at whether the first two digits of the SIC-code of the acquirer matches with that of the target. If these two digits are the same, then the business relatedness variable shows a one, and if not, a zero. Another control variable looks at the attitude of the deal, and shows a one if the acquisition was friendly and a zero it that is not the case. The next control variable takes into account the profitability of the acquiring company at the time of the deal. This is measured by dividing the EBIT with the sales at the time of the announcement, which can easily be extracted from the Capital IQ database. Lastly, normal return (NR) may have an influence on CAR, so although I am not interested in if it really affects CAR or how it affects CAR, to make the formulation more precise, I will also include NR as a control variable.

3.4 Sample

Collecting the data is a two-step process. First I collect the information necessary of the transactions that are used in the analysis, and secondly I collect the stock price of the companies around the time of the merger to be able to calculate the CAR of each given stock. After some calculation and transformation as described earlier, this results in a dataset that is useable for analysis.

As the Capital IQ database is extensive and enormously detailed, certain filters are used. Such filters will exclude other types of transactions that are not relevant to this study. I also filter out any other types of transactions that have not been closed and actually materialized. For data availability purposes, I also exclude any targets or acquirers which are labelled as private. So for reasons to limit the amount of transactions that are in the model, I focus only on acquirers that are active in Europe, and focus only on announcements that were made between 1/1/2018 and 1/1/2019.

When initially analyzing the data, I noticed that there were serial acquirers in the data present. These acquiring companies announced M&A's shortly after the previous one. This

could be problematic for calculating the cumulative abnormal returns as the short timeframe could mean that the previous announcement has been made in the estimation period of another announcement. In order to prevent the normal return calculation from being biased by other announcements, I decided to delete these announcements from the sample when they were in the estimation period of the next announcement.

Besides that, I also deleted the acquiring companies in the sample of which daily returns over the estimation period were not fully accessible or unknown. Due to the fact that a lot of transactions were deleted, I decided to also include data from the year before, so it includes announcements from 1/1/2017 until 1/1/2019. See appendix 1 for an overview of all acquiring companies and announcement dates in the sample.

Analyzing missing values is done quite quickly, as there are no missing values for the dependent as well as all the independent variables. For the control variables of acquirer size and acquirer previous performance, there were some missing values. In total there were 8 observations with missing values for both of these variables. As the other variables of these observations were known and useful for the analysis, the missing values are replaced with the mean of the other observations combined when running the regression. Unfortunately, the variable of deal attitude is deleted, because my sample surprisingly only contains friendly deals. I deleted this variable entirely as it might affect the analysis due to multicollinearity reasons (Field, 2013).

4. Results

This chapter contains a detailed description of the results of this research describing the event study analysis, correlation analysis and regression analysis.

4.1 Event study

The collected data has been analyzed using Statistical Package for the Social Sciences (SPSS version 23.0, IBM, Chicago, Illinois, USA) to find support for the hypotheses. After calculating the cumulative abnormal return as described in the previous section, a one sample t-test is used in order to analyze whether the mean of the sample deviates from zero. The null hypothesis *H0* here is that the cumulative abnormal returns do not deviate significantly from zero, which means that the event has no influence on the performance of the acquirer. The alternative hypothesis *H1* is that the means are significantly different from zero:

 $H0: \overline{CAR} = 0$ $H1: \overline{CAR} \neq 0$

In order to run a one sample t-test on the cumulative abnormal return, I first need to calculate this using the formulas described in the previous chapter. Appendix 1 shows the acquiring companies of the transactions in the sample and their respective cumulative abnormal returns. For more information or a more detailed view of the calculations on the normal returns, abnormal returns or the cumulative abnormal return, I refer to the attached excel document containing calculations.

Before running the test I checked the assumptions of running a t-test (Field, 2013). The assumptions of using continuous variables and the data not being correlated or related are not violated with regard to the data. There are however significant outliers, which also cause the sample not being normally distributed. This is confirmed when comparing the 5% trim mean and the mean values, where a large discrepancy is present between the two. Outliers are identities by looking at the output window in SPSS, where significant outliers are indicated in the boxplot output. Outliers of the cumulative abnormal returns are shown in appendix 2. These significant outliers are deleted until no significant outliers can be identified when analyzing the data. In total, 8 observations have been deleted. Having no significant outliers is an important assumption for running a proper one sample t-test, as they tend to increase the

estimate of sample variance, thus decreasing the calculated t-statistic and lowering the chance of rejecting the null hypothesis (Field, 2013).

With regard to the normal distribution, as the significant outliers have been removed, I can assume that the sample is normally distributed. The central limit theorem states that the distribution of sample means approximates a normal distribution as the sample size gets larger. Sample sizes that are equal to or greater than 30 are considered to be sufficient for the central limit theorem to hold (Field, 2013). As the sample in this study is greater than 30, it is considered large enough to predict the characteristics of a population accurately. The average of the sample means and standard deviations will equal the population mean and standard deviation.

Now the assumptions are met and the data is transformed, I can run the t-test on the cumulative abnormal returns. The mean of the cumulative abnormal return (M= 3.925, SD= .148) is not significantly different from zero with t(84) = 1.479, p = .143. The test value in this one sample t-test is zero. As a check, the t-test is also analyzed with the previous model which did include significant outliers which were also significantly different from zero t(93) = 1.650, p = .102, which confirms that removing outliers was useful as there is a large difference between the results of the tests. There was no statistically significant difference between means (p = .143). Therefore, I cannot reject the null hypothesis and the alternative hypothesis cannot be accepted.

4.2 Correlation analysis

In order to analyze the data, a correlation matrix of this research was made which is shown in Table 1. In this table the means, standard deviation and correlation of all variables are exhibited. Where using Pearson correlation measure assumes linearity and homoscedasticity, Kendall's tau correlation does not (Field, 2013). As these assumptions are met in my dataset as described earlier, I therefore use Pearson in my correlation matrix.

Table 1 shows several correlations between the variables in the model. For the baseline effect, Pearson correlation showed no correlation between CAR and all the relevant variables, with ρ = .111(p = .156) for the cash payment method, ρ = -.178 (p = .052) for the equity payment method, ρ = .083 (p = .226) for the experience of the acquirer and ρ = .098(p = .185) for the reputation of the target. This can be a problem in running the models. Finding a significant correlation is however no prerequisite for running regression (Field, 2013). Once

variables are controlled for, there might be a strong bivariate correlation, but this is a limitation of the dataset and surely something that is taken into account when interpreting results. For 48% of the transactions in the sample the cumulative abnormal returns were above zero, for 52% of the transactions the cumulative abnormal returns were below zero.

The bivariate analysis for the different payment methods showed a significant relation ρ = -.410, p = .000, which makes sense as they are mutually exclusive. For all the transactions for which the cumulative abnormal returns were negative over the event period 78% was funded with cash, for the cases in which the transaction was funded with equity the cumulative abnormal returns were positive in 93% of the cases. The control variable of Normal Return showed a strong correlation with the dependent variable CAR ρ = .314 (p = .002), which makes sense as the CAR variable is partially calculated using the normal returns of the transactions in the sample.

	Variables	М	S	1	2	3	4	5	6	7	8	9	10
1	CAR	1.25%	7.76%	1.000									
2	Payment Cash	0.5294	0.50210	0.111	1.000								
3	Payment Equity	0.0941	0.29373	-0.178	-0.342**	1.000							
4	Acquirer Experience	1.3170	0.48547	0.083	0.047	-0.225*	1.000		_				
5	Target Reputation	1.1302	0.54227	0.098	-0.129	-0.114	0.451**	1.000					
6	Size Acquirer	13250	18147	0.100	0.060	0.010	0.552**	0.294**	1.000				
7	Size Target	32.89	33.268	0.145	-0.055	-0.122	0.438**	0.593**	0.452**	1.000			
8	Business Relatedness	0.4118	0.49507	-0.004	-0.025	0.140	-0.010	-0.008	0.029	-0.018	1.000		
9	Acquirer Profitability	0.0829	0.48345	-0.021	0.131	0.007	0.242*	0.134	0.145	0.135	-0.156	1.000	
10	Normal Return	0.059%	0.325%	0.314**	0.254**	-0.075	0.016	-0.099	-0.017	-0.119	-0.179	0.141	1.000

* Correlationissignificantatthe0,05level(2-tailed).

** Correlationissignificantatthe0,01level(2-tailed).

Table 1: Correlation Matrix (Means, Standard Deviations and Pearson Correlations)

4.3 Regression analysis

After graphically checking the distribution of the variables, highly skewed variables were normalized before running the regression. The reason is the presence of highly skewed variables that can influence the distribution of residuals and make these not normally distributed (Field, 2013). The variables that were adjusted are the total number of previous acquisitions an acquirer has made and the total amount of previous investments that a target has received. The total number of previous acquisitions of the acquirer improved when looking at the Shapiro-Wilk test from p = .000 to p = .088, and the total amount of previous investments improved from p = .000 to p = .208, where both are now significant with regard to being normally distributed. For a graphical representation of the transformation, see appendix 3 and 4.

To check for heteroscedasticity I look at plots in SPSS. The residuals should be independent from the response variable, from all of the predictors as well as from the predicted value of response variable. Looking at the plots, I conclude that the assumption of homoscedasticity is not violated. As SPSS unfortunately does not include any formal tests of heteroscedasticity, I used macros and codes within the program in order to run a formal test, which is the Breusch–Pagen test. Results of this test show insignificant results (p > .05), meaning that the null hypothesis of homoskedasticity cannot be rejected and homoscedasticity is assumed.

To check for normality, I look at the distribution of the residuals after running the regression. Plotting the standardized residuals and the standardized predicted residuals, it shows me that the normality assumption is met. Also running test of normality on the residuals, it does not show a significant result on the Shapiro-Wilk test for both the unstandardized residuals (p = .246) and the standardized residuals (p = .246), meaning that the null-hypothesis is that they are normally distributed cannot be rejected.

Multicollinearity refers to when your predictor variables are highly correlated with each other. To check for multicollinearity, a correlation matrix is constructed. When values are greater than .80, there might be a risk of multicollinearity (Field, 2013). As no values exceed this threshold, I can assume that multicollinearity is not a problem in the data sample. This is confirmed by looking at the collinearity statistics when running the regression, where all of the variables are well below a VIF score of 10, and all tolerance scores are well above 0.2 (Field, 2013).

In order to check whether the values of the residuals are independent, I look at the Durbin-Watson test. With a score of 1.780, this value is close to the value of 2, so I can assume that this assumption is met. In order to check if there are no influential cases in the data, I checked the Cook's Distance statistic foreach transaction. No value is greater than 1, so I can assume that there are no influential cases. A final assumption with regard to the regression analysis is linearity. If your residuals are normally distributed and homoscedastic, you do not have to worry about linearity (Field, 2013), which is the case in this study.

Now assumptions are checked, I can run the regression. The effects of the method of payment, target reputation and acquirer experience on acquirer performance was analyzed by running a binary multiple regression analysis. In the first model the control variables are added, which are the size of the target, size of the acquirer, the business relatedness of the target and acquirer, the profitability of the acquirer at the announcement and the normal return used in the calculation of the CARs. These variables statistically significantly predicted CAR, F(5, 79) = 2.672, p < .05, $R^2 = .145$.

In step 2, a model is analyzed which includes all the control variables and the two dummies which indicate the method of payment, which are the payment in cash and payment in equity variables. These variables statistically significantly predicted CAR, F(7, 77) = 2.152, p < .05, $R^2 = .164$. Step 3 tests the effect of the experience of the acquirer on the cumulative abnormal returns. These variables did not statistically significantly predict CAR, F(6, 78) = 2.199, p = .052, $R^2 = .145$. Step 4 only focusses on the potential effects the reputation of target has on the cumulative abnormal returns. These variables statistically significantly significantly predicted CAR, F(6, 78) = 2.218, p < .05, $R^2 = .146$. Step 5 is the overarching model where not only all control variables are included, but also all other factors which have been tested in previous steps. These variables did not statistically significantly predict CAR, F(9, 75) = 1.662, p = .113, $R^2 = .166$.

Where in the last model the independent variables explain the most of the variance in the cumulative abnormal returns (16.6%), note that the model is not significant. This indicates that the relationship between these variables is not significant on population levels. In a population where there is no relationship between the two variables, the probability of finding the expected results (or more extreme results) is 13.3 percent. Also note that there are no significant findings in all of the models, except the effect of the control variable normal return. For an overview of the results of the multiple regression, see table 2 below.

Robustness checks

To check the robustness of the model, first the estimation period is altered for each of the cumulative abnormal return calculations. Related studies use different estimation periods for their normal return calculations (Mackinlay, 1997; Corrado, 2011), each with their own argumentation for doing so. To prevent potential methodological shortcomings of these previous studies, I changed the estimation period for each of the transaction in the sample by -60 days. Also, the potential curvilinear relationship between experience and acquirer performance was examined by using squared term of the number of previous M&A's as explained in the previous chapter. Changing the estimation period and changing the measurement for acquirer experience did not change the outcomes of the multiple regression analysis. The predictors and their values remain largely the same.

<i>Dependent variable:</i> CAR	Step 1	Step 2	Step 3	Step 4	Step 5
Controls					
Size Acquirer	0.034 (0.000)	0.046 (0.000)	0.034 (0.000)	0.033 (0.000)	0,071 (0,000)
Size Target	0.186 (0.028)	0.161 (0.028)	0.186 (0.029)	0.163 (0.033)	0,148 (0,033)
Business Relatedness	0.048 (1.676)	0.067 (1.698)	0.048 (1.697)	0.048 (1.686)	0,068 (1,720)
Acquirer Profitability	-0.095 (1.730)	-0.087 (1.749)	-0.095 (1.769)	-0.097 (1.744)	-0,080 (1,809)
Normal Return	0.358** (1.730)	0.349** (2.647)	0.358** (2.588)	0.360** (2.587)	0,352** (2,681)
Independent variables					
Payment Cash	-	-0.008 (1.803)	-	-	-0,006 (1,851)
Payment Equity	-	-0.144 (3.023)	-	-	-0,154 (3,185)
Acquirer Experience	-	-	0.000 (2.113)	-	-0,062 (2,289)
Target Reputation	-	-	-	0.041 (1.866)	0,046 (1,974)
F	2.672	2.152	2.199	2.218	1.662
R ²	14.5%	16.4%	14.5%	14.6%	16,6%
# of Transactions	85	85	85	85	85

* Correlation is significant at the0,05 level (2-tailed).

** Correlation is significant at the0,01 level (2-tailed).

Table 2:Hierarchical Overview of Multiple Regression Analysis (Standardized Beta,Standard error)

5. Discussion

In this section theoretical implications, limitations & future directions, practical implications and conclusions of the study are described.

The purpose of this study was to contribute to literature by exploring the consequences and effects of an M&A announcement on the short-term performance of the acquiring company including the moderating effects of the method of payment, the experience of the acquirer and the reputation of the target. Where there was an expected positive effect of an announcement on the performance of an acquirer, through an event study methodology no significant effects were found. Moreover, no significant effects were found for the moderating variables.

To summarize, hypothesis 1 is not supported due to not being statistically significant. No support is found for hypotheses 2a, 2b, 3 and 4 which are therefore also rejected. Other significant correlations and findings of the control variables were found in all the included models. Only the finding that the higher the normal return of a particular acquiring company over the estimation period the more likely that the companies would report better short term performance, which is expected as the normal return is used in the calculation of the cumulative abnormal returns.

5.1 Theoretical implications

The study makes a number of theoretical implications. Through quantitative research, this study cannot confirm that the effects of announcing a merger or acquisition actually contributes either positively or negatively to the short term performance of the acquiring company. As highlighted earlier, the literature on the performance effects of such events is rather contracting. Comparing the outcomes of this study with other research results, I find similar studies that argue on the limited effects of events and announcements surrounding M&As on performance (Connelly et al., 2011; Long, 2002; Pollock & Gulati, 2007).

However, there are also studies that find contradicting results (Bessler, Drobetz & Zimmerman, 2011; Cohen & Dean, 2005; Sanders & Boivie, 2004; Stuart, Hoang & Hybels, 1999; Yang & Lander, 2018). Also, characteristics of pre-acquisition resources might not necessarily predict post-acquisition performance (Zollo & Singh, 2000), which includes the moderating factors that are proposed in this study.

There are several reasons for why the results of this study are not in line with the expectations. The main reason has to do with the methodology of event studies. The choice of the estimation window, event window, the size of the sample and choosing a different model than the mean adjusted model can have effects on the actual results of the event analysis (Ahern, 2009; Corrado, 2011). Altering these could in fact lead to different results with the sample that has been used in this study. Robustness checks in this study were only focused on changing the estimation period, but not the other factors mentioned above due to time constraints.

Also, another explanation for insignificant results of this study is that signal will not be perceived uniformly across firms. Previous research has shown how these signals can be perceived differently because of the great deal of time and effort that is required of managers and investors to seek out potential acquisition targets as well as differences in their understanding of a target's resources and prospects (Trichterborn, Knyphausen & Schweizer, 2016).

Nevertheless, this thesis does contribute on the overall knowledge of M&A performance as it takes a signalling theory perspective, something that has been called upon in recent literature (Colombo, 2021; Wu, Reuer & Ragozzino, 2013). Most of M&A related research takes a similar approach in deriving at their hypotheses, mainly using for example agency theory or resource based view (Wu, Reuer & Ragozzino, 2013). This thesis also adds upon earlier work regarding the sample that has been selected. Overall, work on the effects of M&A announcements on acquirer performance have mostly been studies that focused on the US market. This study adds to previous literature on M&A performance and signalling, by shedding light on the effects of it in Europe alone. Results of studies that focus on the difference between US and the European market show different results by taking a more institutional perspective on signaling theory and argue that prospective investors do not evaluate signals in isolation, but rather, they do so in the institutional context (e.g. Bell, Moore, & Al-Shammari, 2008; Moore, Bell & Filatotchev, 2012).

Also, this study extends upon methodological shortcoming of other studies by taking a broader perspective in terms of the industries that are analyzed. This limitation has been called out in several studies with related research questions (Wu & Reuer, 2021). Analyzing all public transactions from multiple industries offers a broader, more overarching perspective of the dynamics between the signaling effects of M&A announcements.

5.2 Practical implications

Managers are faced with the difficult task of searching and selecting acquisition targets while dealing with high levels of information asymmetry. Previous studies have established that information can be drawn from signals. However, where I propose in this study that the method of payment, the reputation of the target and the experience of the acquirer are characteristics of signals that can influence performance of companies, the results show otherwise. Again, this might be due to different investors interpreting signals and their factors differently (Trichterborn, Knyphausen & Schweizer, 2016), for example that different types of acquirers would affect the degree to which they act upon signals (Wu & Reuer, 2021). The main implication that this study proposes for managers and investors alike, is that the use of M&A announcements as potential signals to the market cannot be used to boost short term performance and that the extent to which acquirers should concern themselves with the preconditions of signals surrounding M&As is limited.

5.3 Limitations and future directions

One of the main limitations of this study is that no significant correlation with the dependent variable was found, and also the regression analysis showed no significant results. In particular the last step in the multiple regression model, which included all the variables in this study, was found to be not significant on population levels. Finding these insignificant results could be a problem due to the sample size, because it will be difficult to find significant relationships from the data when having a small sample as statistical tests normally require a larger sample size to ensure a representative distribution of the population (Field, 2013).

With regard to the event study, the CAPM which is in line with the mean adjusted model, can produce different results compared to the market adjusted model and should ideally both be used in the analysis (Armitage, 1995). Due to having limited time and resource available in writing this thesis, I deliberately picked the mean adjusted model for this study. The limitation of this study is that calculating abnormal returns using the market adjusted model, it might produce different results.

Also, the event study methodology in this research depends CAPM and on the assumption of an efficient market. This assumption is not valid in many situations. The length of time that potential acquirers respond to event signals is random which implies that that

markets could exhibit market inefficiencies because prices do not instantly or fully reflect all available information (Mackinlay, 1997). This is particularly troublesome for this study as it might be that abnormal returns might be spread out over such a long period of time that we are unable to see any significant 'spike' in the AR graph. This could be a reason for not finding significant results in this study.

Another methodological limitation is that the event study methodology provide estimates of the short-run impact on shareholders only and fail to consider many other effects of the event. Events in the stocks of competitors might for example be reflected in the stock price of a company, which can impact the abnormal returns that are not caused by any announcements or events which include the target company (Ahern, 2009).

Moreover, the event study methodology is inherently vulnerable in providing different results when the estimation or event periods are changed. A choice of sample size can also potentially change the results of the study. The sensitivity of event studies is certainly problematic and different conclusions can be drawn by different researchers studying the same event, thereby making it hard for us to choose which result to believe in (Ahern, 2009; Corrado, 2011). Future research could extend upon the sample used in this study, or change the estimation periods and use a market adjusted model in order to check the results found in this study.

From a more theoretical perspective, one of the limitations of this study is that the signalling effects between different industries could have been very different. Not only the effects of M&A announcements as a signal, but also the potential moderating effects of payment method, target reputation and acquirer experience could actually be different across different industries. Research on M&As in multiple industries shows that, although a certain deviation from the industry norm may be beneficial for the acquirer to achieve a competitive advantage in the context of signaling, such deviations may make it more difficult for acquirer to clearly predict the future prospects of the firm based on the information signals (Coff, 2002). In this study I did not control for industry, mainly due to the fact that not all industries are represented equally in the sample. Potential future research could actually analyze these differences between industries more thoroughly, and possibly find what industries are more susceptible to signals and which industries are not.

Similarly, signals could also be interpreted differently between countries. A recent study by Li, Shenkar, Newbury and Tang (2021) for example, show that firms from countries

with better reputations are perceived as having superior skills/capabilities. Investors in this case react more positive to these signals when the reputation of the acquirer's country is better than that of the targets. An interesting future research direction could be focused on what exactly enhances signals in such countries, and also how firms themselves could exploit these country reputations with regard to sending signals.

5.4 Conclusion

In this quantitative study the consequences and effects of M&A announcements on short-term performance of acquirers were analyzed. This thesis tries to combine signalling theory with the stream of literature on M&A performance. An analysis of collected data on 85 transactions showed, through an event study analysis, no significant results when looking at the performance enhancing or diminishing effect of announcements. Moreover, an additional multiple regression analysis showed no significant moderating effects for the method of payment, the experience of the acquirer or the reputation of the target. Findings of this study showed the limited effect of announcements as signals in the European market, and also the limited extent to which acquirers should concern themselves with the preconditions of signals surrounding M&As. This study contributes to the stream of literature on signalling theory, and especially on its relation with M&A events. Additional research will be required to understand more about when and under what circumstances signals work with regard to their value enhancing capabilities, but on how acquirers could potentially precondition these signals to work in their favor.

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Appendix

Appendix 1 – Overview sample

Acquirer name	Date	CAR	Acquirer name	Date	CAR	Acquirer name	Date	CAR
Ellaktor S.A.	12-28-2018	-14,15%	Class Editori S.p.A.	03-17-2018	4,64%	Aeroporto Guglielmo Marconi di Bologna S.p.A	08-03-2017	2,86%
GrupaKapitalowa IMMOBILE S.A.	12-19-2018	6,65%	E.ON SE	03-11-2018	1,75%	French Connection Group PLC	07-27-2017	7,76%
Eiffage SA (ENXTPA:FGR)	12-17-2018	-3,31%	NTS ASA	03-05-2018	-1,97%	Frendy Energy S.p.A.	07-27-2017	-5,59%
CCC S.A.	12-07-2018	-1,09%	AtlantiaSpA	03-02-2018	9,40%	FnacDarty SA	07-26-2017	2,58%
ZEAL Network SE	11-19-2018	-14,44%	UBS Group AG	02-21-2018	2,22%	Andes Energia PLC	07-24-2017	-22,47%
Equinor ASA	11-15-2018	-5,25%	RELX PLC	02-15-2018	4,09%	Halcor Metal Works S.A.	07-19-2017	-0,37%
Sistema Public Joint Stock Financial Corporation	11-11-2018	-0,91%	Vicore Pharma Holding AB	02-08-2018	6,58%	Pt Wicaksana Overseas International Tbk	07-11-2017	20,63%
Reworld Media Société Anonyme	11-08-2018	4,76%	Danske Bank A/S	01-25-2018	-0,98%	Public Joint Stock Company PIK- specialized homebuilder	06-28-2017	3,44%
BNP Paribas SA	11-05-2018	0,22%	ENGIE SA	01-24-2018	-3,69%	PJP Makrum S.A.	06-23-2017	17,84%
Raiffeisen Bank International AG	11-02-2018	7,00%	Carrefour SA	01-11-2018	-1,51%	Poslovnisistem Mercator	06-20-2017	13,57%
VTB Bank	10-23-2018	-5,61%	Tele2 AB	01-10-2018	-6,24%	National Central Cooling Company PJSC	06-19-2017	11,34%
Spar Nord Bank A/S	09-26-2018	0,87%	NN Group N.V.	01-09-2018	4,06%	PGS ASA	06-09-2017	-12,10%
Vifor Pharma AG	09-18-2018	-2,78%	Delta Drone SA	01-03-2018	53,18%	Public Joint Stock Company Rusolovo (MISX:ROLO)	06-08-2017	11,44%
Sampo Oyj	09-14-2018	1,79%	Public Joint Stock Company Inter RAO UES	12-29-2017	6,89%	Satis Group S.A.	05-30-2017	-24,71%
Brack Capital Properties	08-17-2018	1,50%	Teliani Valley Polska S.A.	12-21-2017	8,34%	Drillisch AG	05-12-2017	9,38%
Anglo Pacific Group plc	08-16-2018	8,89%	Vergnet SA	12-15-2017	-3,35%	Medistim ASA	05-12-2017	-0,09%
Public Joint Stock Company ALROSA	07-13-2018	-9,68%	SparekassenSjælland- Fyn A/S	12-14-2017	4,46%	Senterra Energy Plc	05-09-2017	-23,20%
Diageo plc	06-25-2018	-2,37%	AS Trigon Property Development	12-12-2017	-6,91%	Primetech S.A.	05-09-2017	9,87%
A2A S.p.A.	05-16-2018	-10,09%	Netia S.A.	12-05-2017	22,72%	Teliani Valley Polska S.A.	04-05-2017	-1,64%
Holding Varna PLC	05-10-2018	-3,08%	Bioorganic Research and Services S.A.	11-30-2017	58,77%	EDP Renováveis, S.A.	03-27-2017	11,34%
DürrAktiengesellschaft	05-04-2018	3,17%	Parallel Media Group plc	11-29-2017	63,51%	MVV Energie AG	03-16-2017	-7,71%
Airtificial Intelligence Structures, S.A.	04-26-2018	-2,86%	Sport1 Medien AG	11-27-2017	8,38%	Telefónica Deutschland Holding AG	03-13-2017	2,42%
VTB Bank	04-25-2018	-6,04%	Option NV	11-27-2017	-3,35%	Public Joint Stock Oil Company Bashneft	02-28-2017	-0,12%
Holding Varna PLC	04-25-2018	-2,00%	Luka Rijeka d.d.	11-09-2017	0,02%	International Consolidated Airlines Group, S.A.	02-24-2017	1,96%
Polski Bank KomórekMacierzystych S.A.	04-16-2018	-6,22%	asknet Solutions AG	11-08-2017	38,70%	TurkiyeGarantiBankasi A.S.	02-21-2017	-2,86%

Holding Varna PLC	04-13-2018	1,27%	Krakchemia S.A.	10-04-2017	-2,39%	TNS energo Rostov-on-	02-17-2017	-4,48%
						Don		
International Consolidated Airlines	04-12-2018	-0,39%	Volcan Compañía Minera S.A.A.	10-03-2017	29,46%	Polimex-Mostostal S.A.	01-23-2017	-2,76%
Group, S.A.								
Auplata Mining Group	04-05-2018	-3,08%	Softmatic AG	09-26-2017	-41,74%	Intesa Sanpaolo S.p.A	01-23-2017	-10,19%
BERG Holding S.A.	04-02-2018	-11,60%	Polymetal International plc	09-13-2017	6,76%	Public Joint Stock Company Group of Companies TNS energo	01-17-2017	0,52%
Getin Noble Bank S.A.	03-26-2018	-3,91%	Svenska Handelsbanken AB	08-29-2017	5,11%	TNS energo Kuban	01-10-2017	4,87%
Highlight Event and Entertainment AG	03-22-2018	3,62%	Medard S.A.	08-08-2017	38,56%			
Deutsche Telekom AG	03-21-2018	0,97%	China Modern Dairy Holdings Ltd.	08-06-2017	-4,46%			





Appendix 3 – Transformation number of total investments target



Frequencies of total number of investments of the target before transformation.



Frequencies of total number of investments of the target after transformation

Appendix 4 – Transformation



Frequencies of total number of transactions of the acquirer before transformation.



Frequencies of total number of transactions of the acquirer after transformation.