



Shareholders' returns in M&A activity during Bull and Bear markets

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ABSTRACT

We have been witnessing Mergers and Acquisitions (M&A) around the globe, for various reasons. This study covers the period of the last 15 years until the year 2018, being more concentrated on the European activity.

Although several reasons can be appointed as drivers of M&A, this dissertation adds more to the existing literature by connecting the deals activity with the stock market. A bull market, normally associated with the increase of market prices, can be seen as an incentive for mergers and acquisitions activity, however one can also say that bear markets may prevent the managers' hubris behavior and facilitate the implementation of restructuring strategies. As so, we conducted this study to conclude about the acquirers' returns whether they are in the presence of a bull market or a bear market.

By conducting an event study, our evidence shows that the fact that the acquirers are under a bull market has a positive impact on the shareholders' returns. Moreover, if the target is under a bull market, acquirers will earn more than if acquiring a target under a bear market. However, our data also suggests that acquirers' stock prices will react more positively when the entities are experiencing different market's behaviors.

ABSTRACT (PORTUGUESE)

Testemunhamos Fusões e Aquisições (F&A) em todo o mundo, por diferentes razões. Este estudo diz respeito aos últimos 15 anos, até 2018, dando mais relevo à atividade europeia.

Embora diversos motivos possam ser apontados como impulsionadores de F&A, esta dissertação contribui para a literatura existente, uma vez que liga a atividade económica com o estado do mercado financeiro. Um mercado em alta, normalmente associado ao aumento dos preços de mercado, pode ser visto com um incentivo para atividades de fusões e aquisições, no entanto, também se pode dizer que os mercados em baixa previnem o hubris dos gestores e facilitam a implementação de iniciativas de reestruturação. Assim, este estudo tem como objetivo concluir sobre os retornos dos adquirentes, estejam eles na presença de um mercado em alta (Bull) ou de um mercado em baixa (Bear).

Através de um event study, obtivemos evidência de que os adquirentes estarem num mercado Bull tem um impacto positivo no retorno dos acionistas. Além disso, se o alvo estiver num mercado Bull, os adquirentes irão obter melhores resultados do que se adquirirem uma empresa que se encontra num mercado Bear. No entanto, os nossos dados também sugerem que os stock prices para adquirentes vão reagir de forma mais positiva se as empresas estiverem a experienciar diferentes estados nos respetivos mercados.

INDEX

1.	Introduction	1
2.	Literature Review	3
2.1	Definition of Bull and Bear Market	3
2.2	Mergers & Acquisitions.....	4
2.2.1	Motives for Mergers and Acquisitions	5
2.2.2	M&A activity in Europe	6
2.2.3	Shareholder Return in M&A activity	7
2.3	Relationship with the Stock Market	9
3.	Research Question	12
4.	Data and Methodology.....	13
4.1	Event Study Methodology.....	13
4.1.1	Event of interest and event window.....	13
4.1.2	Selection criteria and data.....	13
4.1.3	Abnormal Return.....	15
4.2	Split the sample into Bull and Bear markets	17
5.	Sample Description.....	18
5.1	Transactions distribution per year and country.....	18
5.2	Transactions distribution per stock market.....	22
5.3	Independent explanatory variables.....	24
6.	Results	27
6.1	Descriptive and test statistics for the CAR.....	27
6.2	Descriptive Statistics – Full Sample	28
6.3	Descriptive and test statistics – Univariate analysis	30
6.3.1	All-cash and other methods of payment.....	30
6.3.2	Targets’ Stock Market	31
6.3.3	Domestic vs Cross-Border deals.....	32
6.3.4	Specialization vs Diversification.....	33
6.4	Model Summary	34
6.4.1	Regressions	35
6.4.2	Model summary – Results obtained	36

7. Conclusion	40
8. References	42

INDEX OF FIGURES

Figure 1 Distribution of deals per Area.....	19
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INDEX OF EQUATIONS

Equation 1 Abnormal Return.....	15
Equation 2 Expected returns.....	16
Equation 3 Measure of Abnormal return.....	16
Equation 4 Cumulative Abnormal Return.....	16
Equation 5 Cumulative Average Abnormal Return.....	17
Equation 6 Regression 1.....	35
Equation 7 Regression 2.....	35
Equation 8 Regression 3.....	35
Equation 9 Regression 4.....	35
Equation 10 Regression 5.....	36
Equation 11 Regression 6.....	36

INDEX OF TABLES

Table 1 Selection Criteria – Zephyr Data	14
Table 2 Exclusion reasons detail	15
Table 3 Number of deals per Year	18
Table 4 Distribution of deals per Acquirers’ Country	20
Table 5 Distribution of deals per Targets’ Country	21
Table 6 CAR’s Intervals per Year	22
Table 7 Distribution of deals per acquirers and targets’ stock market	22
Table 8 Distribution of deals per Acquirers’ Stock Market and Year	23
Table 9 Distribution of deals per Targets’ Stock Market and Year	24
Table 10 CAR’s Intervals per Year per Acquirers’ Stock Market	24
Table 11 CAR’s Intervals per Year per Targets’ Stock Market	24
Table 12 Description of the independent explanatory variables	25
Table 13 Distribution of the independent variables per Acquirers’ Area	26
Table 14 Summary of descriptive statistics.....	27
Table 15 Descriptive Statistics for the full sample	29
Table 16 Correlation Matrix.....	29
Table 17 Descriptive statistics for all cash and other methods of payment	30
Table 18 Descriptive statistics by Targets’ stock market	32
Table 20 Descriptive statistics – Domestic vs. Cross-Border deals.....	33
Table 21 Descriptive statistics – Specialization vs Diversification deals.....	34
Table 22 Multiple regression of acquirers' CAR.....	37

1. INTRODUCTION

In this dissertation, I will investigate if shareholder's returns resulting from Mergers & Acquisitions vary according to whether we are in the presence of a bull or a bear market. My study will cover the M&A activity in Europe in the last 15 years. As in the US, merger activity in Continental Europe and UK has occurred in waves, since the 1900s in the UK and with greater intensity in Continental Europe afterwards (Sudarsanam, 2003). However, there are fewer studies about Europe than the ones about the US. Additionally, 15 years are considered to cover a sufficient number of cycles of M&A activity.

There is not a clear and well accepted definition of bull and bear markets, however they are normally described as “periods of generally increasing (decreasing) market prices.” (Chauvet & Potter, 2000). Moreover, the definition used by Pagan & Sossounov (2003) also implies turning points, because, to consider a change from a bull to a bear market, the stock market needs to decline from a previous peak (Pagan & Sossounov, 2003).

When it comes to M&A, merger activity worldwide seems to be related with periods of economic recovery, credit expansion and stock market booms (Martynova & Renneboog, 2008) and firms have an “incentive to merge in periods of economic expansion” (Lambrecht, 2004). Bull markets often occur during these times. Nevertheless, these bull market periods may not be the most appropriate for M&A, because of, as stated by Pangarkar & Lie (2004), the hubris behavior of managers may be influenced by the stock market behavior or even due to the fact that restructuring strategies “may be easier to implement during low market cycles” (Pangarkar & Lie, 2004). Therefore, it is pertinent to know the differences in returns under the two states of the market.

This dissertation will add more to the M&A literature, which is very extensive. Although there is a lot of information about this topic, there are not many studies conducted that connect it with the stock market, therefore the relevance of this research. Most of the studies conclude that “corporate takeovers generate positive gains, that target firm shareholders benefit, and that bidding firm shareholders do not lose” (Jensen & Ruback, 1983).

Firstly, I will start by introducing the definition for Bull and Bear Markets, as according to the literature reviewed. Later, M&A will be described, their motives, activity and the returns generated to the shareholders. At the end, I will complement this literature review by relating M&A with the market environment, which represents my contribution to

the literature already existent.

To address the Research Question, one needs to define the data to be used and methodology to be followed, which are detailed on section 4. Section 5 will describe the sample of deals obtained from database, while in section 6 we will discuss the results. The main conclusions will be presented in section 7.

2. LITERATURE REVIEW

2.1 Definition of Bull and Bear Market

First, it is crucial to define bull and bear markets in order to better understand what they represent in the economy and properly separate one from another in this report. Although its importance is recognized by all authors, there is not an accurate and generally accepted definition of bull and bear markets as authors tend to disagree on specific topics, especially the criteria of selection. Therefore, I will present the main contributions.

A very simple definition was offered by Chauvet and Potter (2000), who stated that, within a stock market terminology perspective, a “bull (bear) market corresponds to periods of generally increasing (decreasing) market prices” (Chauvet & Potter, 2000).

Previously to that, Fabozzi and Francis (1977) investigated, for a sample of 700 NYSE stocks, whether there are significant differences in the regression statistics measured for bull and bear market conditions. Because the definition of these states was crucial for their work, they assumed three diverse definitions. First, one based on market trends, where months when the market rises are placed in the bullish category and “months when the market rose amidst adjacent bearish months were classified as part of the bearish subset” (Fabozzi & Francis, 1977). The second one was based on Up markets, where market returns were non-negative, and Down markets, where market returns were negative. Finally, the last one is the SUD procedure, dividing the sample into months where the market moved substantially up, down or neither, taking into account that a substantial up market is when months have market returns greater than one-half of the standard deviation of the markets’ returns of the period sample and following the same logic for down markets. Kim and Zumwalt (1979) also used a definition similar to the third one on their paper (Kim & Zumwalt, 1979).

However, the definition previously explained does not reflect long-run dependencies in stock prices or trends in stock prices levels. By contrary, the stock prices must have declined by a certain percentage since their prior local peak so we can consider a change from a bull to a bear market, or have increased by a similar percentage since their prior local minimum to be consider a change from a bear to a bull market (Lunde & Timmermann, 2004).

These definitions covered by Fabozzi and Francis (1977) and Kim and Zumwalt

(1979) were also used to perform a three-part examination of the yield/return relationship by Gambola and Liu (Gambola & Liu, 1993). Yet, one more was suggested, previously used by Lockwood and McInish (1990), where a “bull (bear) market is a time period during which the market increases (declines) by at least ten percent from its most recent low (high)” (Lockwood & McInish, 1990).

Furthermore, from what evidence has shown, we can also connect bull market to periods of high-return and low-volatility and bear markets to periods of low-return and high-volatility in the stock market (Maheu & McCurdy, 2000). In 2009, the authors added that it is possible that in bull market we see a correction with negative returns, although the “expected long-run return (primary trend) is positive in that regime.” (Maheu, McCurdy, & Song, 2009). With this, the authors impose that the long-run mean of return should be positive (negative) in a bull (bear) market, with a positive overall mean.

These movements in equity prices can also be defined as extensive periods of time when equity prices rise or fall involving a turning-point (Pagan & Sossounov, 2003). Pagan and Sossounov (2003), based on this, recommended a very important and later used way of identifying the phases. Initially, finding local peaks and troughs when they are the highest or lowest value using a window of 8 months. Then, delete the lower of adjacent peaks and the higher of adjacent troughs. Finally, cycles with less than 16 months should be eliminated as well as phases with less than 4 months, unless there are changes with a rise or fall higher than 20%.

Giving another study as an example, Lubatkin and Chatterjee (1991), when trying to distinguish and define the cycles, stated that a “bear cycle was represented by general downward movement” (Lubatkin & Chatterjee, 1991), a bull cycle by an upward movement and a stable cycle by a no distinct movement, all having a duration of at least 6 months.

As we can see, there have been several contributions to the subject, although none is universally accepted, which may mean that flexibility in the identification of the cycles may occur, although always following the general facts accepted by all authors.

2.2 Mergers & Acquisitions

When we talk about Mergers and Acquisitions, we may be referring to when a firm is acquired by other firm or by its own or outside managers. In the first case, we can have a merger if the target firm becomes part of the acquiring one, a consolidation if both firms

become only one, a tender offer when the target firm still exists, but there are dissident stockholders that hold out and an acquisition of assets if the assets of the target end up belonging to the acquiring firm. In the second case, we have a buyout, the target becomes privately held (Damodaran, 2008). M&A can also be classified as horizontal, vertical or even conglomerates.

Since in my study I will be calculating the shareholder returns in the European market, I will focus on the studies conducted about this topic and region.

2.2.1 Motives for Mergers and Acquisitions

It is important to firstly understand why mergers happen and how that can impact this study. There are several theories that try to explain it, being the Hubris Theory the one where I am going to focus more.

2.2.1.1 *Hubris Theory*

Many authors presented different theories to justify corporate takeovers, being the Hubris theory (Roll, 1986) one of them. The theory states that overconfidence of managers makes them believe that their valuations are correct, even if they are above the current market price, believing that it is the market that is not reflecting the “full economic value of the combined firm” (Roll, 1986). Targets and the final price may be defined by all the board, but the truth is that boards rely on top management for decision making and “Within the top management group, the chief executive officer (CEO) is pivotal in approving bids in large acquisitions” (Hayward & Hambrick, 1997). CEO hubris, as a possible consequence of recent good performance, media praise or even self-importance (Hayward & Hambrick, 1997), combined with lack of vigilance from the board, may result in overpayment and, therefore, in no aggregate gains from takeovers, the increase in market value of target firm will be more than offset by the average decrease in the bidding firm value. Managers aren’t necessary intending to act against shareholders’ interests, but, if they are too optimistic, may invest in negative net present value projects and end up by damaging them (Heaton, 2002). Consequently, Hayward and Hambrick (1997), on their study, found a negative relationship between hubris behavior affecting managers and shareholder returns.

2.2.1.2 Other theories

According to the efficiency theory, Mergers and Acquisitions happen so that synergies can be achieved (Trautwein, 2013). These synergies can be financial, operational or even managerial. In the first, the goal is to reduce cost of capital. Through operational synergies, companies may combine forces and take advantage of that. Finally, the bidder's manager can also benefit the target's manager by having higher abilities or experience. Therefore, there can be a pursuit of synergies such as economies of scale, scope or of vertical integration (Motis, 2007)

The monopoly theory states that mergers happen so that more market power can be achieved (Trautwein, 2013), so that firms can achieve higher profits.

Moreover, the Valuation theory defends that managers “who have better information about the target's value than the stock market” (Trautwein, 2013) are the ones pursuing mergers or acquisitions.

The Managerialism theory defends that self-interest reasons drive managers to perform acquisitions. Moreover, entities may also want to pursue a strategy of increasing its market power. Furthermore, Mergers and Acquisitions can also be related with a search for diversification, modifying its core business or adding new product lines. (DePamphilis (2009))

Other theories can be related with strategic realignments, tax advantages, wanting to borrow more cheaply than separate units, legal considerations, and others. (Motis, 2007).

2.2.2 M&A activity in Europe

Merger and Acquisitions worldwide occur in waves, there are bursts that are followed by periods of inactivity. In this section I will cover the M&A activity in Europe in order to give more insights about what happened in the region being studied in my report.

There were a few merger waves in Europe, from the 1900s to the 1990s. Since the start of the 21st century, M&A activity has started to increase again in 2003, after the decline in 2001. Merger waves tend to be triggered by many economic, politic, regulatory events or technological shocks (Martynova & Renneboog, 2008). These periods were marked by the Single Market initiative, European Monetary Union project, the Cold War, the Berlin Wall collapse, the deregulation and privatization of many firms and even by technological shocks (Sudarsanam, 2003). It is also important to note, because of the objective of this investigation, that it overlapped a period of prolonged bull phases in the stock market. In the

1990s, M&A activity in Continental Europe risen compared to the previous years, although UK continued to be the most active market (Martynova & Renneboog, 2006).

It is also important to describe the UK events, since it was one of the EU countries (now a former EU member) with higher M&A activity, being the largest acquiring country of the world (Conn, Cosh, Guest, & Hughes, 2005). It differs from Continental Europe in terms of hostile takeovers and tender offers, these last ones are more common in the UK, because concentrated ownership structures are predominant in Continental Europe (Martynova & Renneboog, 2011). In the 1960s, the third merger wave took place, with mostly horizontal mergers. In the 1970s wave, horizontal mergers were also very present, although shared the stage with conglomerate mergers as well. The fourth, in the 1980s, once more matched a stock market bull run. Later, there was another in the 1990s, when the largest acquisition in European history occurred, the Vodafone's hostile takeover of the German telecom company Mannesmann and the UK mobile telephone company also acquired Airtouch in the US, becoming the largest of the world. (Sudarsanam, 2003). These last two waves distinguish from the rest because of the fact that the amount of cross-border acquisitions significantly increased (Conn et al., 2005).

2.2.3 Shareholder Return in M&A activity

It makes sense that a merger or acquisition occurs if the market value of the equity shares of the target and of the buyer increases and if this effect happens because of the merger (Elgers & Clark, 1980). The cumulative abnormal returns of shareholders that result from the announcement of a merger will reflect “a revision of the expected value resulting from future synergies or wealth redistribution among stakeholders” (Campa & Hernando, 2004). There are several sources of value appointed by authors, like incremental value from expectations of the replacement of incompetent management (Elgers & Clark, 1980), economies of scale, increased market power, ability to take advantage of technology, financial reasons such as tax advantages or even other types of synergies (Jensen & Ruback, 1983).

There is an extensive amount of studies that cover this topic, especially for the US market. Studies for Europe and more specifically for the UK are not as common but these are still significantly studied. What the research tells us is that the sellers are normally the real winners of the deal and that bidding firm shareholders do not lose, which result in positive gains from corporate takeovers (Jensen & Ruback, 1983). For example, there is evidence of an increase in the combined value of the target and acquiring firms by an average of +7.4%,

for successful tender offer occurring over the period 1963-1984 (Bradley, Desai, & Kim, 1988). For the period of 1919 to 1930, target firm shareholders experienced abnormal returns in excess of 15% and acquiring firm shareholders broke even (Leeth & Borg, 2000). Another study conducted by Elgers and Clark (1980) concluded, for all listed companies present in the Federal Trade Commission's major merger series in the period 1957-1975, "moderate gains to buyer firms and substantial gains to seller firms over the pre-merger period" (Elgers & Clark, 1980). Moreover, conglomerate mergers were the ones showing higher wealth effects, which shows that returns for shareholders might depend, between other things, on the type of merger that occurred. When the study is conducted for both successful and unsuccessful mergers, from 1962 to 1976, target firms exhibit positive and significant average excess returns on the press day and the day before, around +6.2 percent and +7.0 percent, respectively (Asquith, 1983).

However, returns may also depend on the type of payment and the differences are mostly found for acquiring firms. For bidding firms engaged in successful takeovers in the period 1972 to 1981, stockholders experienced negative abnormal returns if financing with common stock, but earned "normal" rates of return at the announcement period in operations financing with cash (Travlos, 1987). Additionally, differences are found between public and privately held bidding firms. When financing with cash, private bidders experience positive abnormal return in stock offers and no abnormal return in cash offers (Chang, 1998). More studies show that bidding firms gain only when acquiring private (or subsidiaries) targets and experience losses when targets are public (Fuller, Netter, & Stegemoller, 2002). For the period of 1996–2001, Western European acquirers of listed targets earn an insignificant average abnormal return of -0.38% and acquirers of unlisted targets earn a significant average abnormal return of 1.48% (Faccio, McConnell, & Stolin, 2006), which is consistent with the findings of the study presented before. Even if we don't consider these differences, but distinguish between big and small acquirers, the announcement returns for the latter are roughly two percentage points higher (Moeller, Schlingemann, & Stulz, 2004). Moreover, Moeller et al. (2004) also states that there is no difference regarding the acquirers' returns between using stock and or cash as method of payment. But research also contests that acquirers only experience abnormal returns when they transfer their own resources to the target (Capron & Pistre, 2002).

In Europe, where my research will be concentrated, target firm shareholders were found to enjoy on average a positive and significant cumulative abnormal return and the

returns, for acquiring firm shareholders, were negative in almost 55% of the transactions (Campa & Hernando, 2004). The results obtained for UK firms are more diverse. Takeover bids in 1969 to 1975 showed that shareholders of the acquired firms made large gains, but the acquiring made losses that more than offset the gains (Firth, 1980). Nevertheless, other study reported, for 1955-1985, that merger announcement date targets gain 25 to 30 percent and bidders earn zero or modest gain (Franks & Harris, 1989). For the period of 2000-2010, European bidders reported positive abnormal returns both in cross-border and domestic acquisitions. Once more, results differ between the UK and Continental Europe. If the bidding firms are located on the UK or acquiring unlisted targets, equity offers result in higher gains for the shareholders. The opposite is found for bidders of Continental Europe (Mateev, 2017). Conn et al. (2005) finds that, for public acquisitions, there are negative returns if the deals are domestic and zero announcement returns if it regards to cross-border deals, since cross-border deals will allow “the internalization of synergies based on intangible information-based assets that would otherwise be lost because of various market failures”.

Capron and Shen (2007) also include in its study the variables Targets and Acquirers pre-merger profitability. The second one is used to measure the “fact that poorly performing acquirers may be enticed to make acquisitions to hide their poor results”. The authors find a positive relation between the targets’ pre-merger profitability, since if the entity is profitable, then it is likely to have valuable resources to be leveraged.

From all the evidence, we can see considerable differences between studies, however, it is clear that target shareholders experience positive abnormal returns, but when it comes to the acquirer shareholders, the results differ. Moreover, it seems that these differences in acquirer shareholders returns may also depend on numerous factors, such as the type of acquisition, ownership or even on the method of payment used.

2.3 Relationship with the Stock Market

In this report, the goal is not to prove the Hubris behavior, but if managers are affected by this, intensified during the high market periods, then shareholders may also get hurt. Bad or good performance of the M&A activity can therefore be related with the market environment, whether we are in the presence of a bull or bear markets, which affects many variables, because the state of the equity market “is of key importance for financial decisions and economic analyses” (Kole & van Dijk, 2017).

The occurrence of mergers is generally related with periods of economic recovery, credit expansion and stock market booms (Martynova & Renneboog, 2008) and “firms have an incentive to merge in periods of economic expansion” (Lambrecht, 2004). Contrariwise, activity slows down during economic recessions (Lambrecht, 2004), which often coincide with bear markets (Chauvet & Potter, 2000).

During bull markets, there is more investment opportunities, higher improvements in firms performance and shareholders are less risk-averse (Lubatkin & Chatterjee, 1991). However, high market periods may not be the most appropriate time for merging because managers might be more impacted by hubris behavior (Pangarkar & Lie, 2004). Managers are more influenced by the positive state of the stock market, since higher profits lead to overconfidence (Gervais & Odean, 2001), resulting in the consequences addressed before, which lead us to conclude that in bull markets investors tend to be more overconfident. Giving as an example studies about individual investors, there is evidence that investors do behave differently depending on market environment, whether we are in the presence of a bull or a bear market, noting that poor trading decisions are more expected during bull markets (Kim & Nofsinger, 2007).

By contrary, during bear markets there are less growth opportunities, a more challenging environment in the stock market, uncertainty and shareholders tend to be more risk-averse and demand a higher cost of equity (Lubatkin & Chatterjee, 1991). For these reasons, the probability of managers presenting hubris behavior decreases and the fact that shareholders are more skeptical constrains managers to not overpay or over value, being also more open to restructuring strategies (Pangarkar & Lie, 2004).

There is evidence of differences between acquisitions regarding the state of the market. Pangarkar and Lie (2004) performed a study with Singapore firms for the period of 1990-1999 and observed large positive CARs (Cumulative abnormal returns) for acquirers during low market cycles and the opposite during high market cycles. Moreover, Bouwman, Fuller and Nain (2009) found that US acquirers in the period 1979-2002 experienced higher announcement returns during high-valuation markets, but “lower long-run abnormal stock and operating performance than those buying during low-valuation markets”(Bouwman, Fuller, & Nain, 2009), concluding that acquisitions occurring during booming markets are fundamentally different than those occurring during depressed markets.

Considering all this, it is pertinent to know the differences in the returns for the two states of the market, concluding about the performance of Mergers and Acquisitions in

diverse market environments.

3. RESEARCH QUESTION

The goal of this dissertation is to analyze shareholders returns in Mergers and Acquisitions under different market environments.

Consequently, the research question is formulated as follows:

Hypothesis 1 (H1): Do shareholders' returns resulting from Mergers and Acquisitions in Europe vary according to whether we are in the presence of a Bull or a Bear market?

4. DATA AND METHODOLOGY

In this chapter, it is detailed the Data used to perform the test and, furthermore, the methodology to conduct the study will be explained.

4.1 Event Study Methodology

There are four approaches to measure M&A profitability: (i) Event studies; (ii) Accounting studies, (iii) Surveys of executives and Clinical studies (Bruner, 2002).

To measure the impact of the Merger or Acquisition (event) in the firm's value, "analyzing share price changes on the day of the takeover announcement" (Martynova & Renneboog, 2011), I will perform an event study, one of the most popular methods applied in finance (Henderson Jr, 1990).

There are several steps that are necessary to follow when conducting an event study, which will be detailed below. The step and theory to perform an event study described are based on (MacKinlay, 1997).

4.1.1 Event of interest and event window

At first, we need to define the event of interest and the event window. In our study, the event of interest is the firms' announcement date of a Merger or Acquisition. When it comes to the event window, the day of the announcement is of crucial importance, the day before the announcement can also matter because the market may acquire information previously (Martynova & Renneboog, 2011) and, finally, the day after the announcement should also be considered. As so, the event window has a length of 31 days, since it starts in $t = -15$ and ends in $t = +15$, plus the announcement day, $t = 0$.

Although daily data presents many differences when compared with monthly data, monthly data will be used as it provides fewer obstacles in performing the study and is straightforward (Brown & Warner, 1985).

4.1.2 Selection criteria and data

Following this, selection criteria needs to be decided so one knows which observations to include in the study. Moreover, we detail below the databases used to gather the necessary information.

Selection criteria:

The database Zephyr was chosen to access data about M&A activity in Europe, taking into account that it includes the information described below. In Table 1 we can find the number of deals gathered and excluded per criteria. All financials were obtained in EUR.

- Listed targets and listed or unlisted acquiring companies;
- Only completed and confirmed deals;
- Deals types correspondent to Mergers or Acquisitions;
- Deals occurred between 1 January of 2000 and 31 December of 2018 completed;
- Deals occurred in Eastern and Western Europe, Euro Area and in the European Union.

Table 1 Selection Criteria – Zephyr Data

Selection Criteria	Step result	Search Result
Listed/Unlisted/Delisted companies: listed acquirer, unlisted acquirer, listed target	294,884	294,884
Deal type: Mergers and Acquisitions	689,435	19,224
Time period: on and after 01/01/2000 and up to and including 31/12/2018 (completed-confirmed, completed-assumed)	1,525,468	12,181
World regions: European Union, European Union enlarged (28), Western Europe, Eastern Europe (Acquirer OR Target OR Vendor)	828,703	5,505
Current deal status: Completed	1,586,628	5,505
Pre deal multiples: Deals match at least one criteria; including estimates; Pre-deal value multiple on operating revenue/turnover: All deals with a known multiple; Pre-deal equity value multiple on operating revenue/turnover: All deals with a known multiple; Pre-deal enterprise value multiple on operating revenue/turnover: All deals with a known multiple; Pre-deal modelled enterprise value multiple on operating revenue/turnover: All deals with a known multiple; Pre-deal total target value multiple on operating revenue/turnover: All deals with a known multiple	429,320	2,417
Total		2,417

Later, some deals were excluded since not all the necessary information to conduct

the study in more detail was present on the list. Therefore, we were left with 122 deals, by considering the exclusion reasons displayed on Table 2.

Table 2 Exclusion reasons detail

Inicial number of deals	2,417
Exclusion reason:	
Unlisted/Delisted Acquirers	1,976
No information available regarding Pre and Post-deal Acquirers' indicators	113
No information available regarding Pre and Post-deal 'Targets' indicators	68
No information regarding the ownership type	16
No price history data available for the period considered	122
Final number of deals	122

Although the number of deals reduced considerably, it is still appropriate to state that the sample comprises a various range of criteria and different deals, as it will be described on section 5.

Benchmark and estimation data

For the present study, it was necessary to obtain weekly acquirer’s stock returns and the weekly index returns, as monthly data is used. Both information was obtained from Thomson Reuters Eikon database, except for the entities for which no data was available at the platform. In those cases, the data was extracted from investing.com website.

4.1.3 Abnormal Return

With all the necessary data and sample defined, the event’s impact will be measured through the abnormal returns:

$$AR_{it} = R_t - E(R_{it}|X_t)$$

Equation 1 Abnormal Return

As the formula suggest, the abnormal return (AR_{it}) is the actual ex post return of the security over the event window (R_t) minus the normal return of the firm over the event window ($E(R_{it}|X_t)$), being i and t the firm and the event date, respectively and X_t the

conditioning information for the normal return model.

For modelling the normal return, one from two possible models can be chosen: the constant mean return model where X_t is a constant, and the market model where X_t is the market return and there is a stable linear relation between the market return and the security return. As the objective of the study is to analyse M&A activity, the market model is going to be the one used since “The market model represents a potential improvement over the constant mean return model” (MacKinlay, 1997). Moreover, it is also defended by Brown and Warner (1980) that the market model is both well-specified and relatively powerful under a wide variety of conditions, and in special cases even simpler methods also perform well.

Since the market model will be used:

$$E(R_{it}) = \alpha + \beta_i R_{mt} + \varepsilon_{it}$$

with $E(\varepsilon_{it}) = 0$ and $var(\varepsilon_{it}) = \sigma_\varepsilon^2$

Equation 2 Expected returns

being $E(R_{it})$ the expected returns of the acquiring firm i on day t , R_{mt} the market return on day t , ε_{it} the stochastic error, α the measure of average return of shares of the firm that is not explained by the market and β_i the measure of sensibility of shares of the firm i to market volatility. In order to obtain the OLS regression, we compared the market returns over each period with the weekly stock prices of each acquirer under analysis, using the period from $t=-365$ to $t=-15$

For the market portfolio, S&P500, the CRSP Value Weighted Index and the CRSP Equal Weighted Index are the most popular choices (MacKinlay, 1997). As we are analyzing the Mergers and Acquisitions in Europe, we will use the Euro Index.

The measure of abnormal return will then be:

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

Equation 3 Measure of Abnormal return

With t being the event day, $t-15$ the days before and $t+15$ the days after, and R_{it} the actual return of the share of acquiring firm i on day t . The cumulative abnormal return (CAR) will be calculated in order to give the sum of all the ARs through the event window:

$$CAR_i = \sum_{t=1}^t AR_{it}$$

Equation 4 Cumulative Abnormal Return

It is assumed for the study that there is an independent relation between the abnormal returns of acquiring firms and cumulative average abnormal returns. Since we will conduct a study over a number of different entities and considering N the number of deals selected, the cumulative average abnormal returns (CAAR) for acquiring firms are described as follows:

$$CAAR = \frac{\sum_{i=1}^N CAR}{N}$$

Equation 5 Cumulative Average Abnormal Return

4.2 Split the sample into Bull and Bear markets

In order to test if the returns are different for the two states of the market, as already explained above, the sample needs to be divided.

To estimate if each entity, on the time of the announcement, was under a bull or a bear market, we followed the study "A Simple Framework for analyzing Bull and Bear Markets" (Pagan and Sossounov, 2003). As it was detailed above, the authors imply that the next steps must be followed to estimate if the market is on a bull or bear phase:

1. Defining local peaks and troughs as the point when they are the highest or lowest values in a window eight months on either side;
2. For adjacent minimums, consider only the smallest value and for adjacent maximums, consider only the largest value;
3. Turns within 6 months of beginning and end of series and peaks (or troughs) at both ends of series which are lower or higher should be eliminated;
4. Each cycle must have a duration higher than 16 months;
5. Each phase must have a duration higher than 4 months. Exceptions occur when there is a fall or a rise greater than 20%.

As so, for each entity, the Zephyr database provided information about the of acquirer stock exchange. The price history of each one was extracted from Thomson Reuters Eikon database. Finally, by applying the rules detailed above, one can conclude if, around the announcement date, the acquirer was under a bull or a bear market.

5. SAMPLE DESCRIPTION

As indicated on subject 4.1.2 Selection criteria and data, a total of 122 deals are considered on the study. On this section, we describe the data obtained.

5.1 Transactions distribution per year and country

The final sample for analysis includes deals since 2004 until 2018. The majority of the transactions were performed in 2015 (19%), 2017 (15%) and in 2013 (12%). By contrary, the years 2018, 2009, 2005 and 2004 are the ones with fewer transactions.

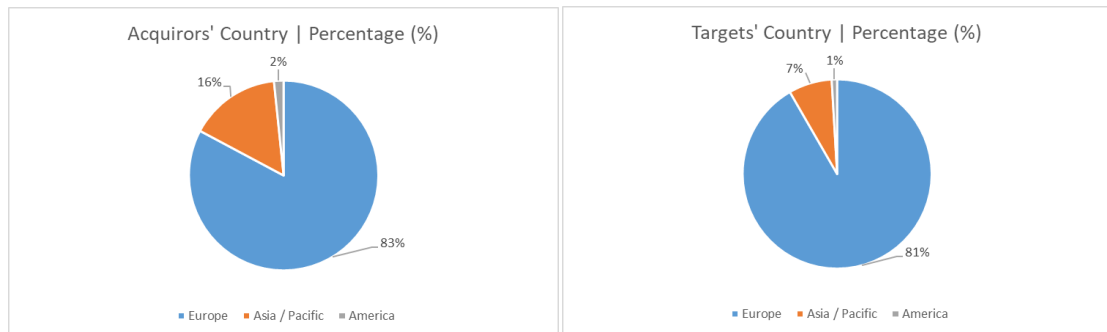
Table 3 Number of deals per Year

Year	N° of Deals	Percentage (%)	Cumulative percentage (%)
2004	1	1%	1%
2005	1	1%	2%
2006	2	2%	3%
2007	8	7%	10%
2008	6	5%	15%
2009	1	1%	16%
2010	2	2%	17%
2011	11	9%	26%
2012	13	11%	37%
2013	15	12%	49%
2014	6	5%	54%
2015	23	19%	73%
2016	14	11%	84%
2017	18	15%	99%
2018	1	1%	100%
Total	122	100%	

As we can state from the above table, the sample includes a range of 15 years, distributed through time, although more concentrated in the second half of the time range, since 2011 to 2018.

Regarding the entities' country, we selected deals for which the acquirer or target were from European Union, European Union enlarged (28), Western Europe or Eastern Europe.

Figure 1 Distribution of deals per Area



Europe, as the area of study, is responsible for more than 80% of deals selected. However, the deals were conducted by entities from various regions, being Poland (22%) the most relevant, followed by the Russian Federation (14%) in the case of targets and by France (11%) in the case of acquirers.

Table 4 Distribution of deals per Acquirers' Country

Acquirers' Country	N° of Acquisitions	Percentage (%)
Poland	27	22%
France	14	11%
Russian Federation	14	11%
Italy	10	8%
Germany	6	5%
Japan	6	5%
Portugal	6	5%
United Kingdom	6	5%
Bulgaria	4	3%
Belgium	3	2%
Croatia	2	2%
Cyprus	2	2%
India	2	2%
Korea, Republic of	2	2%
Romania	2	2%
Sri Lanka	2	2%
Sweden	2	2%
Thailand	2	2%
Turkey	2	2%
Canada	1	1%
Finland	1	1%
Israel	1	1%
Norway	1	1%
Singapore	1	1%
Switzerland	1	1%
United Arab Emirates	1	1%
United States	1	1%

Table 5 Distribution of deals per Targets' Country

Target Country	N° of Acquisitions	Percentage (%)
Poland	27	22%
Russian Federation	17	14%
France	13	11%
Italy	7	6%
Germany	4	3%
Portugal	4	3%
Spain	4	3%
Thailand	4	3%
Bulgaria	3	2%
Japan	3	2%
Morocco	3	2%
Switzerland	3	2%
Turkey	3	2%
United Kingdom	3	2%
Belgium	2	2%
Croatia	2	2%
India	2	2%
Romania	2	2%
Sri Lanka	2	2%
Sweden	2	2%
Bosnia and Herzegovin	1	1%
Canada	1	1%
Colombia	1	1%
Ghana	1	1%
Ireland	1	1%
Kazakhstan	1	1%
Korea, Republic of	1	1%
Lithuania	1	1%
New Zealand	1	1%
Norway	1	1%
Serbia	1	1%
United States	1	1%

Moreover, we can also see that the results show that 51% of deals result in returns for acquirers between -20% and 0%.

Table 6 CAR's Intervals per Year

Year	Acquirers' Cumulative Abnormal Returns (CAR)					Total
	[-40%;-20%]	[-20%;0%]	[0%;20%]	[20%;40%]	[40%;60%]	
2004	-	1	-	-	-	1
2005	-	1	-	-	-	1
2006	-	1	1	-	-	2
2007	-	8	-	-	-	8
2008	1	3	2	-	-	6
2009	1	-	-	-	-	1
2010	-	2	-	-	-	2
2011	1	7	3	-	-	11
2012	1	6	5	-	1	13
2013	-	5	10	-	-	15
2014	-	2	4	-	-	6
2015	3	12	7	-	1	23
2016	-	3	10	1	-	14
2017	3	10	5	-	-	18
2018	-	1	-	-	-	1
Total	10	62	47	1	2	122
%	8%	51%	39%	1%	2%	

5.2 Transactions distribution per stock market

As explained before, the purpose of the study is to conclude if there is any correlation between the stock market state, either we are in the presence of a bull or a bear market, and the acquirers' returns. After concluding about the stock market state for each acquirer and target, by following the steps described in section 4.2 Split the sample into bull and bear markets, it is correct to say that the sample under analysis is well disperse.

Table 7 Distribution of deals per acquirers and targets' stock market

Acquirer	Target			
	Bear	Bull	Total	%
Bear	36	5	41	34%
Bull	11	70	81	66%
Total	47	75	122	100%
%	39%	61%	100%	

As seen in Table 7, during Bull markets there is a significantly higher number of deals. 66% and 61% of the deals were done when the Acquirer's or the Target's stock market was through a bullish stage, respectively. Additionally, 57% of deals relate to Mergers and Acquisitions between entities that were both under a bull market (70 deals).

If one analyzes the sample through time, one can state that for both acquirers and targets' entities, there are more number of deals in which the entities were under a bear market in 2015 – 32% in the case of acquirers and 28% for targets. Regarding the entities under a bull market, the sample is more disperse. However, this may also occur because there are more deals on the sample that were performed around the year 2015.

Below we can see the detail of entities through time and market, for both acquirers and targets.

Table 8 Distribution of deals per Acquirers' Stock Market and Year

Year	Acquirer				Total
	Bear	%	Bull	%	
2004	-	0%	1	1%	1
2005	-	0%	1	1%	1
2006	-	0%	2	2%	2
2007	6	15%	2	2%	8
2008	6	15%	-	0%	6
2009	1	2%	-	0%	1
2010	-	0%	2	2%	2
2011	7	17%	4	5%	11
2012	-	0%	13	16%	13
2013	4	10%	11	14%	15
2014	1	2%	5	6%	6
2015	13	32%	10	12%	23
2016	1	2%	13	16%	14
2017	2	5%	16	20%	18
2018	-	0%	1	1%	1
Total	41	100%	81	100%	122
%	33%		66%		

Table 9 Distribution of deals per Targets' Stock Market and Year

Year	Target				Total
	Bear	%	Bull	%	
2004	-	0%	1	1%	1
2005	-	0%	1	1%	1
2006	-	0%	2	3%	2
2007	7	15%	1	1%	8
2008	5	11%	1	1%	6
2009	1	2%	-	0%	1
2010	-	0%	2	3%	2
2011	9	19%	2	3%	11
2012	2	4%	11	15%	13
2013	5	11%	10	13%	15
2014	1	2%	5	7%	6
2015	13	28%	10	13%	23
2016	1	2%	13	17%	14
2017	3	6%	15	20%	18
2018	-	0%	1	1%	1
Total	47	100%	75	100%	122
%	38%		61%		

If we see the estimated CARs between the different markets, the results on tables 10 and 11 show for both that the majority of deals presents returns between -20% and 0%.

Table 10 CAR's Intervals per Year per Acquirers' Stock Market

Acquirers' Market	Acquirers' Cumulative Abnormal Returns (CAR)					Total
	[-40%;-20%]	[-20%;0%]	[0%;20%]	[20%;40%]	[40%;60%]	
Bear	5	25	10	1	-	41
Bull	5	37	37	-	2	81
Total	10	62	47	1	2	122
%	8%	51%	39%	1%	2%	

Table 11 CAR's Intervals per Year per Targets' Stock Market

Targets' Market	Acquirers' Cumulative Abnormal Returns (CAR)					Total
	[-40%;-20%]	[-20%;0%]	[0%;20%]	[20%;40%]	[40%;60%]	
Bear	5	28	14	-	-	47
Bull	5	34	33	1	2	75
Total	10	62	47	1	2	122
%	8%	51%	39%	1%	2%	

5.3 Independent explanatory variables

The CAR (Cumulative abnormal returns of acquirers within the event window) is the dependent variable in the study. Additionally, several independent explanatory variables were

defined using the available information gathered, the first one presented is a variable of interest while the remaining are control variables, since, as described on section 2.2.3, there can be various factors that affect the shareholders' returns.

Table 12 Description of the independent explanatory variables

Independent Variable	Description
Acquirer Market	Dummy variable that takes the value of 1 if the acquirer is under a Bull Market and 0 if not. Variable of interest, due to the goal of the study.
Target Market	Dummy variable that takes the value of 1 if the target is under a Bull Market and 0 if not.
All-Cash	Dummy variable that takes the value of 1 if the deal method of payment is Cash and 0 if not.
Size	The relative proportion of target's assets to acquirer's assets.
Country	Dummy variable that takes the value of 1 if the entities (acquirer and target) are from the same country and 0 if not.
Industry	Dummy variable that takes the value of 1 if the entities (acquirer and target) are from the same industry and 0 if not.
Year	The year in which the acquisition took place.
Europe	Dummy variable that takes the value of 1 if the acquirer or target are from Europe and 0 if not.
Target profitability	Target's profitability before the acquisition. It corresponds to the ROA before the deal, which is the EBIT of the entity divided by total assets.
Acquirer profitability	Acquirer's profitability before the acquisition. It corresponds to the ROA before the deal, which is the EBIT of the entity divided by total assets.

The first two variables – Acquirer market and Target Market – are used to test if the shareholders' returns are dependent on the stock market phase. The All-Cash variable is used to test if the acquirer tends to show better results when the transactions are performed using cash or other forms of payment. The Size variable is used to understand if the acquirers' returns depend on the relative size of the target firm when compared to the acquirer's size.

The country variable regards to if the transaction is a domestic deal or a cross-border merger or acquisition. The variable Industry is included to understand if acquisitions between entities of the same industry perform better than others do, showing the effects of specializations versus diversification. To control for the timing and locations of the acquisitions, the variables Year and Country are used. Finally, the last two variables – Acquirers and Targets’ profitability – compare the total assets of each entity, indicating its profitability before the deal.

The variables should show a positive coefficient if the shareholders’ returns depend positively from them.

The next table shows the geographical distribution of some independent variables considered above. The sample is more represented by domestic deals (67%) and by deals within the same industry - 63% of the deals regard to specialization approaches. As already stated, the bull market is also more representative. Finally, most of the deals included on the sample correspond to European acquirers, as being one of the goals of this study.

Table 13 Distribution of the independent variables per Acquirers’ Area

	Acquirer's Area			Total
	Europe	Asia / Pacific	America	
Acquirer Market				
Bull	67	14	-	81
Bear	36	3	2	41
Target Market				
Bull	58	16	1	75
Bear	45	1	1	47
All-Cash				
Cash	39	8	1	48
Other	64	9	1	74
Country				
Domestic	73	9	0	82
Cross-Border	30	8	2	40
Industry				
Specialization (same industry)	64	11	2	77
Diversification (different industry)	39	6	0	45

6. RESULTS

This chapter includes the results obtained, concluding about the shareholders' returns over the event window of [-15;15] (monthly data), using the Market Model. The control variables detailed on chapter 5.3 Independent explanatory variables will be introduced in the analysis. The OLS Regression was used to obtain the abnormal returns of each acquirer, over a period of 15 years, for a total 122 deals.

6.1 Descriptive and test statistics for the CAR

We obtained the descriptive statistics for the CAR, for the full sample (122 deals). We performed the non-parametric Wilcoxon Signed Rank test to better understand if the median of the full sample is statistically different from zero and the T-test for means. To test for differences between medians, we ran the Wilcoxon rank-sum (Mann-Whitney) procedure.

Additionally, we obtained the data for two different samples – Bull (1) for the deals when the acquirer is under a bull market and Bear (2) for the deals when the acquirer is under a bear market. Table 14 present the results for all samples.

Table 14 Summary of descriptive statistics

	Market Model			
	[-15;15]			
	All	Bull (1)	Bear (2)	Diff. (1-2)
CAAR	(0,0169)	0,0047	(0,0596)***	0,064287***
Median (CAR)	(0,0198)**	(0,0072)	(0,0723)***	0,065092***
Std. Deviation (CAR)	0,1318	0,1253	0,1355	
Positive CAR (#)	50	39	11	
Observations (#)	122	81	41	

t-statistic follows a t-student distribution. ***, **, * denotes for 1%, 5%, and 10% significance level for a two-tailed test.

The results show, for the full sample, that there is a negative impact on shareholders' returns, as result of the acquisition, indicating negative abnormal returns, with a negative median, with a 95% confidence level. This is consistent with previous studies, which indicate that shareholders normally break-even or lose - Leeth & Borg, 2000, Campa & Hernando, 2004 and Firth, 1980.

By dividing the population as indicated, the results are similar to the full sample. For Bull

sample (1), the acquirers' returns are, in average, positive, however not statistically significant.

For the case of the second sample, Bear (2), the mean and median CARs are statistically significant and negative ($p\text{-value} < 0.01$).

There are statistically significant differences between the mean and median CARs of the two different samples (Bull and Bear), at a 1% level. The results show that median CARs are higher in 6,4% for deals in which acquirers are under a Bull Market than for Bear markets, as well as mean CARs (6,5% higher). As so, one can conclude that in this sample the acquirers under a bull market perform better, even if generating negative returns.

6.2 Descriptive Statistics – Full Sample

Table 15 gives us information about the mean, median and other values for the full sample of 122 deals.

Regarding to the stock market, as already stated, 66% of deals correspond to acquirers under a bull market and 61% of deals to when the target is under a bear market. Moreover, 39% of deals used cash as method of payment. We can also state that 63% correspond to deals performed between entities of the same industry, following a specialization approach, and 67% are deals between entities of the same country.

The Acquirers' profitability varies between -12% and 30% with a mean of 3% and the Targets' profitability vary between -67% and 94%, with a mean of 6%.

Acquirer and Target profitability have positive skewness, therefore more concentrated on the negative returns and with a longer right tail.

The Kurtosis indicator is higher for the variables Acquirer profitability, Target profitability, showing that these indicators displays more extreme tails.

Table 15 Descriptive Statistics for the full sample

	Acquirer Market	Acquirer Profitability	All-Cash	Europe	Country	Industry	Size	Target Market	Target Profitability
Mean	0,6639	0,0311	0,3934	0,8934	0,6721	0,6311	3,4763	0,6148	0,0555
Median	1,0000	0,0206	-	1,0000	1,0000	1,0000	0,2368	1,0000	0,0494
Maximum	1,0000	0,2963	1,0000	1,0000	1,0000	1,0000	326,8326	1,0000	0,9371
Minimum	-	(0,1197)	-	-	-	-	0,0013	-	(0,6744)
Std. Dev.	0,4743	0,0612	0,4905	0,3098	0,4714	0,4845	29,5879	0,4887	0,1515
Skewness	(0,6941)	1,2888	0,4363	(2,5503)	(0,7334)	(0,5436)	10,8319	(0,4716)	1,8193
Kurtosis	1,4818	5,9394	1,1903	7,5039	1,5378	1,2955	118,8666	1,2224	20,0470
Jarque-Bera Probability	21,51 0,0000	77,70 -	20,52 0,0000	235,36 -	21,80 0,0000	20,78 0,0000	70 629,85 -	20,58 0,0000	1 544,52 -
Sum	81,00	3,79	48,00	109,00	82,00	77,00	424,11	75,00	6,77
Sum Sq. Dev.	27,22	0,45	29,11	11,61	26,89	28,40	105 928,70	28,89	2,78
Observations	122	122	122	122	122	122	122	122	122

(i) Acquirer market: dummy variable defined as 1 if acquirer is under bull market and 0 if under a bear market; (ii) Acquirer Profitability: Acquirer's profitability (ROA) before the acquisition; (iii) All-cash: dummy variable defined as 1 if the deal method of payment is Cash and 0 if not; (iv) Europe: dummy variable defined as 1 if the acquirer or target are from Europe and 0 if not; (v) Country: dummy variable defined as 1 if the entities are from the same country and 0 if not; (vi) Industry: dummy variable defined as 1 if the entities are from the same industry and 0 if not; (vii) Size: relative proportion of target's assets to acquirer's assets; (viii) Target Market: dummy variable defined as 1 if target is under bull market and 0 if under a bear market; (ix) Target profitability: Target's profitability (ROA) before the acquisition.

By analyzing the correlation matrix between the independent variables of the model, one can conclude that there is no evidence regarding collinearity. Yet, acquirer market and target market variables have a correlation of 0.72, which may suggest collinearity problems.

Table 16 Correlation Matrix

	Acquirer Market	Acquirer Profitability	All-Cash	Europe	Country	Industry	Size	Target Market	Target Profitability
Acquirer Market	1,0000								
Acquirer Profitability	0,0594	1,0000							
All-Cash	0,0402	0,2180	1,0000						
Europe	(0,1332)	(0,2118)	(0,1025)	1,0000					
Country	(0,0164)	0,0341	(0,1523)	(0,0148)	1,0000				
Industry	(0,0404)	0,1093	(0,1146)	0,0113	(0,2806)	1,0000			
Size	0,0595	0,0364	0,1104	0,0317	(0,1177)	0,0620	1,0000		
Target Market	0,7204	(0,0092)	(0,0865)	(0,2188)	0,1647	(0,0815)	(0,1169)	1,0000	
Target Profitability	(0,0665)	0,2234	0,1099	(0,0781)	(0,0751)	0,0921	(0,0175)	(0,0927)	1,0000

(i) Acquirer market: dummy variable defined as 1 if acquirer is under bull market and 0 if under a bear market; (ii) Acquirer Profitability: Acquirer's profitability (ROA) before the acquisition; (iii) All-cash: dummy variable defined as 1 if the deal method of payment is Cash and 0 if not; (iv) Europe: dummy variable defined as 1 if the acquirer or target are from Europe and 0 if not; (v) Country: dummy variable defined as 1 if the entities are from the same country and 0 if not; (vi) Industry: dummy variable defined as 1 if the entities are from the same industry and 0 if not; (vii) Size: relative proportion of target's assets to acquirer's assets; (viii) Target Market: dummy variable defined as 1 if target is under bull market and 0 if under a bear market; (ix) Target profitability: Target's profitability (ROA) before the acquisition.

6.3 Descriptive and test statistics – Univariate analysis

In this section, we divided our sample into sub-groups, using for that matter the different dummy variables created and indicated on section 5.3. For each, we also divided between the cases in which the acquirer is in the presence of a bull market (sample Bull (1)) or bear market (sample Bear (2)), similar to what was performed in section 6.1.

Once more, we have tested the statistical significance of means, medians and differences between medians using the T-tests, Wilcoxon signed rank tests and the Wilcoxon rank-sum (Mann-Whitney) tests, respectively.

6.3.1 All-cash and other methods of payment

Firstly, we divided our sample between deals which cash was used as method of payment and deals that used other forms and included the results in Table 17.

Table 17 Descriptive statistics for all cash and other methods of payment

	Market Model			
	[-15;15]			
	All	Bull (1)	Bear (2)	Diff. (1-2)
All-Cash				
CAAR	(0,02697)*	(0,0096)	(0,0652)*	0,05559*
Median (CAR)	(0,0182)	(0,0141)	(0,0560)	0,0419
Std. Deviation (CAR)	0,1006	0,0839	0,1392	
Positive CAR (#)	19	14	5	
Observations (#)	48	33	15	
Other method of payment				
CAAR	(0,0104)	0,0145	(0,0564)**	(0,0709)**
Median (CAR)	(0,0216)	0,0069	(0,0850)**	0,0919**
Std. Deviation (CAR)	0,1465	0,1473	0,1360	
Positive CAR (#)	31	25	6	
Observations (#)	74	48	26	
Diff. (Mean)	(0,0166)	(0,0241)	(0,0088)	
Diff. (Median)	0,0034	(0,0210)	0,0290	

t-statistic follows a t-student distribution. ***, **, * denotes for 1%, 5%, and 10% significance level for a two-tailed test.

All-cash: dummy variable defined as 1 if the deal method of payment is Cash and 0 if not.

For the full sample (All), deals which cash was used as method of payment show negative mean CARs statistically significant at a 90% confidence level. When comparing to the cases when other methods were used, the returns are, in average, lower.

In the case of sample Bull (1), the results are not statistically significant, however we are

not able to reject the null hypothesis, one can comment that the returns for acquirers that use cash as method of payment are also lower.

For the sample Bear (2), acquirers earn higher average returns, although always negative, when the method of payment chosen is not cash: the results show a mean of -6,52% for All-Cash sample, with a significance level of 10% and a mean of -5,64% for the sample in which the method of payment is different from cash, with a significance level of 5%. This is consistent with the results found for the full sample.

Regarding the differences found between the two separate samples, there is a statistical difference between the deals performed with acquirers under a bull or bear market, suggesting that, in average, acquirers under a bull market perform better when using cash as a method of payment. The opposite can be stated for deals in which another method of payment was used, since in this case the average returns of acquirers under a bull market are around 7% lower than the ones experienced by acquirers under a bear market.

6.3.2 Targets' Stock Market

To understand if the state of the stock market that targets were experiencing during the time of the acquisition has effect on the returns earned by Acquirers, we show the results below on Table 18.

Table 18 Descriptive statistics by Targets' stock market

	Market Model			
	[-15;15]			
	All	Bull (1)	Bear (2)	Diff. (1-2)
Target Market - Bull				
CAAR	(0,0045)	0,0027	0,0298	(0,0271)
Median (CAR)	(0,0072)	(0,0056)	(0,0560)	0,0504
Std. Deviation (CAR)	(0,1369)	0,1320	0,2131	
Positive CAR (#)	36	34	2	
Observations (#)	75	70	5	
Target Market - Bear				
CAAR	(0,0511)***	0,0175	(0,0720)***	0,0895**
Median (CAR)	(0,0637)***	(0,0090)	(0,0761)***	0,0671***
Std. Deviation (CAR)	0,1167	0,0721	0,1203	
Positive CAR (#)	14	5	9	
Observations (#)	47	11	36	
Diff. (Mean)	0,0466**	(0,0148)	0,1018	
Diff. (Median)	0,0565**	0,0035	0,0201	

t-statistic follows a t-student distribution. ***, **, * denotes for 1%, 5%, and 10% significance level for a two-tailed test.

Target Market: dummy variable defined as 1 if target is under bull market and 0 if under a bear market.

For the full sample (All), the data shows, with a significance level of 1%, that the mean and median CARs are negative for when the targets acquired are on bear market. If the targets are under a bull market, the returns for Acquirers are higher, with a positive difference with a significance level of 5%, for both the mean and median CARs.

Regarding the sample Bull (1), the results are not statistically significant, but one can comment that the data shows better returns for acquirers, however taking into account that the null hypothesis can't be rejected.

In the case of sample Bear (2), the average and median CARs are also negative, with a 1% significance level.

Moreover, if we compare the two separate samples, the average CAR for when the acquirer is under a bull market and the target is under a bear market is higher than when both are under a bear market, with a significance level of 5%.

6.3.3 Domestic vs Cross-Border deals

We separated our sample between domestic and cross-border deals, comparing the data found for when the acquirer and target are located on the same country with cross-border deals.

Table 19 Descriptive statistics – Domestic vs. Cross-Border deals

	Market Model			
	[-15;15]			
	All	Bull (1)	Bear (2)	Diff. (1-2)
Domestic (same country)				
CAAR	(0,0177)	(0,0017)	(0,0487)**	0,0470
Median (CAR)	(0,0253)**	(0,0097)	(0,0761)**	0,0664*
Std. Deviation (CAR)	0,1289	0,1375	0,1058	
Positive CAR (#)	33	25	8	
Observations (#)	82	54	28	
Cross-border (different country)				
CAAR	(0,0152)	0,0174	(0,0830)	0,1003**
Median (CAR)	(0,0136)	0,0019	(0,0637)*	0,0656**
Std. Deviation (CAR)	0,1393	0,0975	0,1874	
Positive CAR (#)	17	14	3	
Observations (#)	40	27	13	
Diff. (Mean)	(0,0025)	(0,0190)	0,0343	
Diff. (Median)	(0,0117)	(0,0116)	(0,0124)	

t-statistic follows a t-student distribution. ***, **, * denotes for 1%, 5%, and 10% significance level for a two-tailed test.

Country: dummy variable defined as 1 if the entities are from the same country and 0 if not.

Table 19 shows that, for the full sample (All), the results are more consistent with the findings of Conn et al. (2005), which defends that the announcement returns in public acquisitions are higher for cross-border deals than for domestic acquisitions. Median CAR for the full sample is negative with 5% significance level in 2,53%.

For the sample Bull (1), the results are not statistically significant, but are similar to those found for the full sample, however taking into account that the null hypothesis can't be rejected.

Regarding sample Bear (2), the mean and median CARs are negative, with a significance level of 5%, for domestic deals. In case of cross-border deals, the median CAR of -6,37% indicates that acquirers still earn negative returns, however more favorable than the median CAR for domestic deals.

Nevertheless, the results are always more favorable for the cases when the acquirer is under a bull market than when it is under a bear market, with positive significant differences found between the two samples (1 and 2).

6.3.4 Specialization vs Diversification

We also divided the sample between the sub-group specialization, when the acquirer and target are on the same industry, and the sub-group diversification when it regards to deals between entities of different industries. Table 20 indicates the mean and median CARs for

the full sample and for each sub-group.

Table 20 Descriptive statistics – Specialization vs Diversification deals

	Market Model			
	[-15;15]			
	All	Bull (1)	Bear (2)	Diff. (1-2)
Specialization (same industry)				
CAAR	(0,0117)	0,0104	(0,0525)*	0,0629*
Median (CAR)	(0,0242)	(0,0029)	(0,0712)*	0,0683**
Std. Deviation (CAR)	0,1365	0,1223	0,1535	
Positive CAR (#)	32	25	7	
Observations (#)	77	50	27	
Diversification (different industry)				
CAAR	(0,0259)	(0,0045)	(0,0733)**	0,0688*
Median (CAR)	(0,0191)*	(0,0131)	(0,0896)**	0,0765*
Std. Deviation (CAR)	0,1245	0,1315	0,0950	
Positive CAR (#)	18	14	4	
Observations (#)	45	31	14	
Diff. (Mean)	0,0142	0,0149	0,0208	
Diff. (Median)	(0,0051)	0,0102	0,0184	

t-statistic follows a t-student distribution. ***, **, * denotes for 1%, 5%, and 10% significance level for a two-tailed test.

Industry: dummy variable defined as 1 if the entities are from the same industry and 0 if not.

As expected, the returns experienced when the entities are from the same industry are higher than the opposite, for all samples. This is consistent with the results of both Leeth et al. (2000), and Martynova et al. (2011), which defend that specialization approaches generate higher returns for acquirers than deals that follow industry diversification.

The results are only significant for the case of the sample Bear (2), which shows negative mean and median CARs for both specialization and diversification approaches, although the results for when the entities are on the same industry are better.

Moreover, the differences between samples 1 and 2 are statistically significant, showing once more that acquisitions that occur when the acquirer is under a bull market are higher than when experiencing a bear market.

6.4 Model Summary

The following results were obtained by running the multiple regression for the event window of $[t-15;t+15]$ and using the Market Model as benchmark.

Our main goal is to conclude on the variable Acquirer market, to assess if the returns

vary accordingly to the stock market phase. However, we performed different regressions to understand the impact of including other control variables, described on section 5.3.

6.4.1 Regressions

Below we summarize the different multivariate regressions performed. In total, six different models were computed.

Regression 1 was computed to conclude on the effect of the Acquirers' stock market phase:

$$CAR_i = \beta_0 + \beta_1 Acquirer\ Market$$

Equation 6 Regression 1

Regression 2 captures the effect of the Targets' stock market phase:

$$CAR_i = \beta_0 + \beta_1 Target\ Market$$

Equation 7 Regression 2

Regression 3 regards to the combination of the Acquirer and Target's stock market with the interaction term $Acquirer_market * Target_market$:

$$CAR_i = \beta_0 + \beta_1 Acquirer\ Market + \beta_2 Target\ Market + \beta_3 Acquirer\ Market * Target\ Market$$

Equation 8 Regression 3

Regression 4 is the combination of all variables, except for the interaction term:

$$CAR_i = \beta_0 + \beta_1 Acquirer\ Market + \beta_2 Target\ Market + \beta_3 All\ Cash + \beta_4 Country + \beta_5 Europe + \beta_6 Size + \beta_7 Industry + \beta_8 Acquirer\ Profitability + \beta_9 Target\ Profitability$$

Equation 9 Regression 4

Regression 5 includes the variables above, plus the interaction term:

$$\begin{aligned}
 CAR_i = & \beta_0 + \beta_1 \textit{Acquirer Market} + \beta_2 \textit{Target Market} + \beta_3 \textit{All Cash} \\
 & + \beta_4 \textit{Country} + \beta_5 \textit{Europe} + \beta_6 \textit{Size} + \beta_7 \textit{Industry} \\
 & + \beta_8 \textit{Acquirer Profitability} + \beta_9 \textit{Target Profitability} \\
 & + \beta_{10} \textit{Acquirer Market} * \textit{Target Market}
 \end{aligned}$$

Equation 10 Regression 5

Finally, regression 6 accounts for the effect of all the variables, except for the pre-deals profitability indicators.

$$\begin{aligned}
 CAR_i = & \beta_0 + \beta_1 \textit{Acquirer Market} + \beta_2 \textit{Target Market} + \beta_3 \textit{All Cash} \\
 & + \beta_4 \textit{Country} + \beta_5 \textit{Europe} + \beta_6 \textit{Size} + \beta_7 \textit{Industry} \\
 & + \beta_8 \textit{Acquirer Market} * \textit{Target Market}
 \end{aligned}$$

Equation 11 Regression 6

6.4.2 Model summary – Results obtained

On table 21, the results for the multiple regression of acquirers' CAR are displayed.

All results indicate that the acquirers earn negative returns as a result of the acquisition, as expected from the descriptive statistics commented on section 6.3.

Below, we will comment the results obtained for each regression. It is also important to note that the variable of interest does not change their signal once more independent variables are added to the model.

Table 21 Multiple regression of acquirers' CAR

Variable	Market Model					
	Estimation	[-15;15]				
	(1)	(2)	(3)	(4)	(5)	(6)
Acquirer Market	0,0643** 0,0247		0,0895** 0,0442	0,0507 0,0385	0,1076 0,0522	0,1090** 0,0516
Target Market		0,0555** 0,0241	0,1018* 0,0612	0,0198 0,0387	0,1056 0,0659	0,1084* 0,0650
All-Cash				(0,0128) 0,0264	(0,0115) 0,0262	(0,0126) 0,0253
Country				(0,0040) 0,0281	0,0178 0,0310	0,0186 0,0305
Europe				0,0065 0,0411	0,0070 0,0408	0,0085 0,0396
Size				(0,0001) 0,0004	(0,0002) 0,0004	(0,0002) 0,0004
Industry				0,0170 0,0267	0,0169 0,0265	0,0159 0,0259
Acquirer Profitability				(0,0008) 0,2136	0,0003 0,2121	
Target Profitability				(0,0461) 0,0825	(0,0359) 0,0822	
Acquirer Market*Target Market			(0,1166) 0,0740		(0,1383) 0,0865	(0,1415)* 0,0855
Constant	(0,0596)*** 0,0211	(0,0511)*** 0,0189	(0,0720)*** 0,0214	(0,0687) 0,0565	(0,0955) 0,0586	(0,0993)* 0,0573
Observations (#)	122	122	122	122	122	122
R-Squared	0,0535	0,0424	0,0761	0,0676	0,0887	0,0870
Adjusted R-Squared	0,0456	0,0344	0,0526	(0,0073)	0,0066	0,0224
Log likelihood	77,9449	77,2326	79,4206	78,8622	80,2545	80,1460
F-statistic	6,7816	5,3099	3,2404	0,9025	1,0798	1,3466
Prob(F-statistic)	0,0104	0,0229	0,0246	0,5228	0,3838	0,2280

Note: For each variable, the standard deviation is displayed below the coefficient.

***, **, * denotes for 1%, 5%, and 10% significance level.

(i) Acquirer market: dummy variable defined as 1 if acquirer is under bull market and 0 if under a bear market; (ii) Acquirer Profitability: Acquirer's profitability (ROA) before the acquisition; (iii) All-cash: dummy variable defined as 1 if the deal method of payment is Cash and 0 if not; (iv) Europe: dummy variable defined as 1 if the acquirer or target are from Europe and 0 if not; (v) Country: dummy variable defined as 1 if the entities are from the same country and 0 if not; (vi) Industry: dummy variable defined as 1 if the entities are from the same industry and 0 if not; (vii) Size: relative proportion of target's assets to acquirer's assets; (viii) Target Market: dummy variable defined as 1 if target is under bull market and 0 if under a bear market; (ix) Target profitability: Target's profitability (ROA) before the acquisition.

In order to test our hypothesis, we firstly computed a regression considering only the independent variable Acquirer market. With a statistical significance level of 5%, it indicates that the fact that the acquirer is under a bull market has a positive impact on the acquirers'

returns. However, only 5% of the acquirer's CAR can be explained by this variable.

Secondly, we computed a regression by including the variable target stock market. In this case, we reach the conclusion, with a significance level of 5%, that the fact that the target is in a bull market has also a positive impact on the acquirers' returns. Once more, only 4% of the acquirer's CAR can be explained by this variable.

In regression 3, it was introduced an interaction term Acquirer Market*Target Market, to capture the additional effect of both the acquirer and target being under a bull market. When analyzing the regressions that include the interaction term, one should be aware that, as stated before, these two variables have a higher level of correlation when compared to the other independent variables (0.72). We can state that for both the acquirer and target, the results also show that acquirers earn more when the acquirer is under a bull and the same occurs for when the target is under a bull, with a significance level of 5% and 10%, respectively. Although the interaction term is not statistically significant, we can see that it overcomes the variable Acquirer market, which means that if the acquirer is under a bull market and the target under a bear market, it will have a more positive impact on the acquirers' returns. We reach the same conclusions when we consider the interaction term together with the variable Target market, the acquirers will earn more if the target is under a bull and they are under a bear market.

In regressions 4 and 5, we performed a model using all variables described and later adding the interaction term. However, no variable shows to be statistically significant.

Lastly, in regression 6, we included the interaction term Acquirer Market*Target Market, but excluded the pre-deal profitability indicators. The results indicate, with a significance level of 5%, that acquirers earn more when under a bull market, similar to the other models. For the case of the variable Target Market, results show that acquirers' returns will be higher and positive if the targets are under a bull market. The interaction term was included to obtain the additional effect of the state of the targets' market together with the acquirers' market. By evaluating together the variables Acquirer Market and the interaction term, one can conclude that, as the coefficient of the interaction term, with a significance level of 10%, overcomes the coefficient of the variable Acquirer Market, then acquirers will lose if both the acquirer and target are under a bull market. Therefore, it is correct to say, that acquirers' returns react more positively when the acquirer and target are experiencing different markets behaviors.

Although the other variables described below are not statistically significant, we can also

comment the results obtained, being aware that one cannot reject a null hypothesis.

The all-cash deals present negative returns for acquirers when compared with deals using other methods of payment. This is contrary to the literature pointed by Martynova et al. (2011) or even Leeth et al. (2000).

Moreover, deals between entities of the same country outperform cross-border deals. The same occurs for when the acquirers or target are from Europe.

Regarding the relative size of the target firm, the results indicate that acquirers' returns react negatively as the targets' size increases. This is contrary to what is defended by Faccio et al. (2006), who indicates that there is a positive correlation between the relative size and acquirers' returns.

For the case of the industry, results show that deals between entities of the same industry, following a specialization approach, perform better, which is consistent with the literature, as already pointed out on section 7.3.5.

We can also comment the pre-deal profitability data. The variables of profitability show that the acquirers experience better returns if the acquirer presents worst profitability before the deal, when the interaction term is not considered. The same conclusion is reached for the variables target profitability. The conclusions about the variable Target profitability are contrary to those found by Capron and Shen (2007). However, regarding the Acquirers' pre-merger profitability, the results indicate, as defended by the authors, that an acquirer performing poorly may only acquire another entity to show the poor results and not have the necessary resources to perform a well-succeeded acquisition.

7. CONCLUSION

In this dissertation, we intended to connect the returns obtained by acquirers during M&A activities with the state of the stock market. For that matter, we obtained information for a total of 122 deals in order to study the difference in returns for acquirers as a result of M&A, whether they are in the presence of a bull or a bear market.

Firstly, we gathered information from the literature review, which indicates that, in fact, the state of the stock market may be related with the returns obtained by the entities, whether it is because a Bull market can promote the hubris behavior of managers or because restructuring strategies such as mergers and acquisitions can be easier to implement during low market cycles.

Furthermore, the literature also indicates that the targets are the winners as result of M&A activity, earning positive returns, and that the results for acquirers are more disperse.

We studied if the acquirers' returns vary accordingly to the state of the stock market and included control variables to add the effect of other factors that may explain the different acquirers' returns.

Firstly, we can conclude that our study suggest that acquirers earn negative returns as a result of M&A activity.

Moreover, the data shows with statistical significance that acquirers' returns react positively to the fact that acquirers are under a bull market. Nonetheless, one should note that in two of the six regressions this is not clear, since the results are not statistically significant. The same conclusions are reached when we connect the shareholders' returns with the targets' state of the stock market. As so, one can say that our study does not support the hubris behavior or the fact that bull markets may promote this conduct.

Additionally, we also wanted to see if the acquirers' returns are dependent on the different combinations between the state of the stock market of the acquirer and target. For that, we included an interaction term with these two variables. The results suggest that earnings for acquirers will be better if the acquirer and target are experiencing different market states. This supports the idea that restructuring strategies may be easier to implement when one of the entities is in a worst state, promoting measures that will have a big impact on the target.

We believe that the dissertation in analysis supports the relevance of performing more

studies relating the stock market with M&A activity. Finally, we suggest that different studies are conducted on this matter, but including a higher number of deals and a more dispersed data, in order to assess the returns obtained in different combinations of acquirer and target stock market states.

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