To Merge or Not to Merge: The Shareholder Perspective on M&As

A Quantitative Study on the European Manufacturing Industry

Gustaf Sandelin & Serge Terzian

Table of Contents

Abstract

This study examines if abnormal return occurs in conjunction with merger announcements in the short-term and compares it with the compounded one-year buy-and-hold abnormal return in the long-interval for European manufacturing firms. In the final sample, the short-term study consisted of 209 firms, while the long-term incorporated 207, both during a sample period of 20 years. In addition, a set of deal traits were introduced to ensure that the transaction itself had an impact on the acquirer's performance. Further, four different regressions are performed, each with twelve explanatory variables, to determine the variations in abnormal returns, and to establish deal characteristics which may determine the success of the transaction. The results from the short-term event study establish abnormal return five days prior to the announcement, the event day itself, and the subsequent trading day, while in the long-term, the average buy-and-hold abnormal return is negative 14.93%, all on statistically significant levels. As for the explanatory regressions, the empirical results indicate that acquirer's abnormal return is negatively correlated with cash-only transactions and the financial ratio, research and development spendings over sales, while private target firms are positively correlated with the dependent variable. This holds true for the short-term regressions, while in the long-term, focused transactions are positively correlated with abnormal return, however, this is the only variable which is significant. This is most probably a consequence of the noisy individual buy-and-hold abnormal return over the holding period. Thus, the findings suggest that the market reacts favourably to the announcement of a transaction, however, over the subsequent year the perception reverse, and shareholder value diminishes.

Keywords: Mergers and acquisitions, determinants of value creation, event studies, European manufacturing industry.

Acknowledgements

We would like to give a special thanks to our supervisor Jens Forssbaeck for providing invaluable support and guidance throughout our thesis.

1. Introduction

In 2020, the manufacturing sector accounted for 8.8% of all enterprises in the EU's non-financial business economy. This comprised of more than 2.0 million enterprises in total. Despite being hit hard by the pandemic, the sector employed around 29.4 million people in 2020, which represented 23% of all employees in the non-financial business economy. Similarly, the sector's contribution to non-financial business economy value added was 1,880 billion euro, representing a 29% share of the total. Despite a drop in both employment (2.5%) and value added (almost 6%) in 2020 compared to pre-pandemic times, manufacturing remained the largest industry in terms of its contribution to employment and value added within the EU's non-financial business economy (Eurostat, 2020).

Mergers and acquisitions (M&As) in the manufacturing industry are primarily driven by a combination of factors, including a tight labour market, the need for scalability, and the volume of capital expenditures. Historically low levels of unemployment have led skilled labour to become scarce, prompting manufacturing firms to seek acquisitions as a means of expanding their talent pool and fuelling growth. Additionally, technology and equipment that can improve existing processes are being targeted as a means of overcoming the shortage in skilled labour. Companies with advanced manufacturing technology are viewed as strategic acquisition targets for their ability to improve operations and scalability. In an increasingly competitive market, diversifying product offerings is a key strategy for many companies who seek to leverage existing expenses while gaining access to new distribution channels and customer bases. As such, businesses are exploring M&A as a means of expanding their operations and enhancing their competitive position in the market. (Allen, Gibbs & Houlik, L.C.).

Moreover, in periods of economic contraction and uncertainty, many firms seek to improve their balance sheets and achieve a competitive edge by engaging in M&As. Organic growth is often a slow process, especially for firms in the manufacturing industry, hence many companies view M&As as an effective means of accelerating growth. The effects can be multifaceted, encompassing a firm's stock price, capital structure, and future growth potential (Hartman Executive Advisors). Kristin Ringland claims that among the most frequently cited rationales for manufacturing firms conducting M&As are portfolio expansion, geographic expansion, and consolidation. Furthermore, to innovate and maintain their competitiveness, businesses also look to acquire new technology and research and development (R&D) capabilities (Financier Worldwide, 2020). On the other hand, this growth has resulted in increased competition,

necessitating companies to pursue continuous growth to remain competitive (Thanos and Papadakis, 2012).

Appendix I depicts the significant increase in European M&A activity from 1985 to 2022, revealing that M&A transactions tend to occur in waves that peak just before economic downturns. The market had a total value of 1,678 billion euros and 20,414 transactions at the end of 2022 which was close to the pre-financial crisis peak as well as its all-time high in 2018. Despite the impact of COVID-19, the recovery of the market was quick and witnessed a record-breaking 23,554 transactions in 2021. Additionally, the value of transactions made during 2020-2022 had remained relatively stable. This indicates that the M&A market in Europe has been resilient despite recent economic challenges (IMAA 2022). While the European M&A market has recently received more attention because of higher activity and deal flow, there has been little research devoted to specific industry performance, such as the manufacturing industry.

The purpose of this thesis is to examine whether acquisitions are value-enhancing by evaluating and comparing the short- and long-term abnormal stock returns of publicly listed European acquiring firms, classified as in the manufacturing industry following the announcement of a bid between the years 2000 and 2020. We will then explore how different M&A deal characteristics explain our results. As the majority of previously conducted research and literature is based on the US market, it is interesting to survey if the theories and empirical studies discussed in the literature review of this study are applicable to the European manufacturing industry. Since it could be argued that the American market is much more homogeneous than its European counterpart, one might deem that synergies and integration of target firms are more efficient, cumulating in more favorable returns for the bidder. Although the European single market exists, it is still far less integrated than the US, with each country deciding for itself, with challenges such as different tax jurisdictions, regulatory framework, language barriers, cultural differences, and business law, just to name a few. Lastly, by comparing the short- and long-term event studies, one can examine the markets' initial reaction and compare it to itself one-year after. Does the perception of the transaction change, and if so, why? The research questions encompassing our objectives are thus:

RQ1: Between 2000 and 2020, did the announcement of M&A deals have a positive short- and long-term impact on bidding firms in the European manufacturing industry?

RQ2: Do the calculated abnormal returns of these firms differ between the short- and long-term event studies?

RQ3: What deal- and firm specific determinants can be used to explain the variations in abnormal return, if any?

Our findings suggest that European acquirers in the manufacturing industry gain from merger announcements in the short-term event study, hence they experience statistically significant abnormal returns. However, most of the markets' initial reaction is centered in close proximity to the announcement itself. Conversely, in the long-term, the buy-and-hold abnormal return is on average negative 14.93%, also on significant levels. In the subsequent regressions, our results indicate that acquirer's abnormal return is negatively correlated with cash-only transactions and the financial ratio research and development spendings over sales, while private target firms are positively correlated with the dependent variable. This holds true for the short-term regressions, while in the long-term, focused transactions have a positive impact on abnormal return.

The present study is organized as follows: Firstly, a thorough review of the theoretical framework is presented with motives for and against mergers and acquisitions. Subsequently, a comprehensive review of the relevant literature and previous studies in the field is provided in conjunction with hypotheses developments. Following this, section four outlines the methodology and sample data employed. Finally, chapter five delves into the empirical results and lastly, section six covers the analysis and discussion while section seven is the conclusion.

2. Theoretical Framework

This chapter endeavours to clarify the theoretical foundations of the study. Firstly, the strategical motives for M&As are examined, such as growth motive and synergies. Secondly, specific types of synergies are brought up and discussed followed by the efficient market hypothesis, and lastly, unsuccessful mergers are defined accompanied by the Agency- and Hubris theories which may explain negative impact on acquirer value after a deal.

2.1 Concepts behind Mergers and Acquisitions

Most researchers and industry observers agree that mergers are of strategic nature and driven by a complex pattern of motives that differ across deals, hence, no single approach may render a full account (Trautwein, 1990). However, Gaughan (2007, p.117) argues that the two most cited motives for mergers and acquisitions are synergies and accelerated growth. Thus, advocates of a deal will often justify the specific purchase price based on an ability to grow faster and/or expected synergy gains. The two key types of synergies are defined as financial and operational (Gaughan, 2007, p.117). A synergy is described as the additional value that is generated by combining two firms, hence, creating opportunities that would have otherwise not been available to these firms when operating independently (Damodaran, 2005).

2.1.1 Growth Motive

One of the fundamental motives for mergers and acquisitions is to achieve economic growth. Thus, firms that seek to expand their operations are faced with a choice between organic/internal growth and inorganic growth via M&As. The two alternatives render advantages and disadvantages. Organic growth can be slow and uncertain, leading competitors to respond quickly and capture market share. Growth via M&As on the other hand might be a much more rapid process, even if it brings its own uncertainties, and firms have the possibility to grow within one's own industry, but they may also expand outside their business category (Gaughan, 2007, pp.117-118).

2.1.2 Operational Synergies

According to Gaughan (2007, pp.124-125), operational synergies are a product of either revenue enhancements and/or cost reductions and can be derived through both vertical- and horizontal mergers. Of the two previously mentioned synergy drivers, cost reduction is more easily achieved and thus, more focused upon. The following practices are often cited as the main drivers of operational synergies:

1. *Economies of scale*. The combined firm can decrease its per-unit costs due to an increase in the scale or size of the firm's operations. This is especially important for manufacturing firms, which are usually capital-intensive and operate at high per-unit costs for low levels of output. This is often a consequence of high fixed costs, such as manufacturing facilities and heavy machinery, which are spread out over relatively low levels of output. However, as the output rises, the per-unit costs decrease. This is especially important if the merged firms operate in the same industry, i.e., the deal is categorized as horizontal (Gaughan, 2007, p.127).

2. *Economies of scope.* The ability of the newly formed entity to utilize its resources to offer a broader range of products and services to its customer base. Because of this, smaller firms receive a wider band of services and products that they could not afford before (Gaughan, 2007, p.129).

3. *Pricing Power.* When a firm establishes a greater market share and competitive advantages through M&As, the firm gains pricing power towards customer and suppliers.

2.1.3 Financial Synergies

The financial synergy between merging partners or an acquiring firm can lead to a lower default risk or cost of capital, where the new entity has a wider debt capacity and less volatility in cash flows. Henceforth, wide swings up and down in the combined firm's cash flow would be less likely and thus, the risk for bankruptcy would diminish. In addition, better use of tax shields and tax planning may reduce the risk of insolvency (Chatterjee, 1986; Gaughan 2007, p.133).

2.2 Efficient Market Hypothesis

According to McWilliams and Siegel (1997), the efficient market hypothesis (EMH) introduced by Fama (1970) is the fundamental assumption made in the event study empirical methodology, since in financial literature, any new and relevant information is defined as an event. So, if any impact or change to an asset price were to be observed or measured appropriately and accordingly, it would need to be directly explainable by the event in the short-term. In the case of the long-term event window, the EMH assumption seems to not hold as effectively, since according to some researchers, the impact of the events is not rapidly reflected into asset prices which violates the EMH. Although there may be situations where information is revealed slowly over time, such as during an acquisition where details about potential acquirers and their evaluation of the target take significantly longer to surface, researchers must provide a rationale for why the effect of the event would not be realized within

a short period. Failing to do so undermines the validity of the event study method (McWilliams and Siegel, 1997). On the other hand, Fama (1998) suggests that market efficiency should be assumed in the long-term anyway, by arguing that the long-term event window is a more effective gauge of market efficiency than the short-term window. According to him, the long-term window provides a better reflection of the actual economic influence of events on stock prices, whereas the short-term window is susceptible to noise.

2.3 Unsuccessful Mergers and Acquisitions

Even though there are many empirical reasons why mergers and acquisitions are favoured in practice, several prominent research articles argues that M&As are value-destroying on average for the acquiring firms' shareholders in the long-term. However, no specific reasons can be established as explanation and thus, the resolution to this anomaly remains a challenge to both professionals and academics (See Agrawal et al., 1992; Loughran and Vijh, 1997; Rau and Vermaelen, 1998). There are numerous definitions of what characterize an unsuccessful- or value-destroying merger. Bruner (2009) defines an unsuccessful merger as a merger in which the predestined goals set by the acquirer are not met. Furthermore, the benchmark for measuring post-merger performance is the return required by investors, in other words, the opportunity cost of passing on other investments with similar volatility. Thus, if the investment yields a rate which is higher than the required rate, value is created and, if lower, value is destroyed. Similarly, if the yield of the investment is equal to the required return, value is conserved (Bruner, 2009).

2.4 The Agency theory

As previously discussed in section 2.3, mergers and acquisitions are not always fruitful to the acquirer. There is an abundance of reasons and consequences why an acquisition might not yield the desired effects, or to the opposite, being value-destroying. However, two common sources of misguided mergers can be explained by the Agency- and the Hubris theory, which we now will delve into. The literature on economics places great emphasis on the analysis of conflicts that arise from the agency problem. At its core, the agency problem describes a conflict of interest between the shareholders, who seek to maximize the value of the company, and the management, who may prioritize their own personal objectives over maximizing shareholder value (Jensen and Meckling, 1976). Modern corporate structures, where ownership and management are separated, exacerbate this problem.

According to the agency theory, the motivations behind M&As primarily stem from the self-interest of the bidder's management rather than shareholder wealth maximization (Sharma and Ho, 2002). This self-interest is often driven by managers' personal interests such as increasing salaries, receiving promotions, job security, status, or power. Managers may seek to increase the size of their corporations through takeovers, viewing them as a quicker way to grow than through organic means. However, this may result in the company becoming larger than optimal and lead to negative consequences in the long run (Jensen, 1986). Another reason why managers may use M&As is to prevent their own company from being taken over, as suggested by Kahl, Gorton, and Rosen (2009).

The free-cash-flow hypothesis suggests that managers may divert the company's free cash flows to advance their personal ambitions, rather than distributing the funds to shareholders (Jensen, 1986). When shareholders receive payouts, it creates conflicts as it reduces managers' power and control over resources. As a result, managers are motivated to expand their firms beyond the optimal size to increase their power and compensation (Jensen, 1986). This goes together with the free cash flow theory, where cash that should be distributed to shareholders ends up invested into M&A activities to grow the size of the firm, resulting in a more favorable outcome for the acquirers' management but at the shareholders' expense (Jensen, 1986).

As a result, managers may pursue M&A transactions, even with negative net present value, as they run out of profitable alternatives. This tendency has been empirically demonstrated, as acquirers with excess cash flows often engage in overbidding, destroying shareholder value (Jensen, 1986). Additionally, some managers may view M&A deals as a means to increase the company's dependence on their expertise, even if this results in reduced company value (Shleifer and Vishny, 1989). Furthermore, according to Berkovitch and Narayanan (1993), the severity of the agency problem negatively impacts the acquirers' shareholders' gains and positively impacts the targets' shareholders' value.

2.5 Hubris Theory

The hubris theory presented by Roll (1986) suggests that the overconfidence of managers in acquiring companies can lead to subsequent takeovers that result in a decrease in the wealth of their shareholders. This occurs when the acquiring companies overestimate the potential gains of the M&A transaction, resulting in paying too much for the target companies. Unlike the agency theory, which assumes that managers intentionally seek to maximize their own wealth

and utility, the hubris hypothesis suggests that managers may believe they are acting in the best interest of their shareholders and overestimate the price of the target company.

Furthermore, according to DePamphilis (2009), hubris and competition between bidders may cause the winner to overpay. He, among other previous studies conducted by (See Hayward and Hambrick, 1997; Craninckx and Huyghebaert, 2010) support Roll's argument that hubris may cause the winner to pay more than the target firm is worth. The winner's curse, a phenomenon where the winning bid is typically significantly higher than the target firm's expected value, is likely to occur in an auction with several bidders. In this way, the hubris theory can be regarded as a special version of the winner's curse (Varaiya, 1988).

3. Literature Review

This chapter cohere the theories and concepts previously introduced in the theoretical background with relevant empirical research within the field of measuring abnormal returns for acquiring firms in conjunction with merger announcements. In addition, both short- and long-term event studies are introduced to survey the immediate and post-merger stock performance. Lastly, we present value-determinants which will be used in the regressions to examine what drives the variations in abnormal return, if any.

3.1 Short-Term Event Study and Hypothesis Development

The examination of stock return behaviour after firm specific events, such as mergers and acquisitions, has been researched extensively in financial economics. Event studies, first introduced by Fama et al. (1969), give valuable insight to how stock prices react to new market information. In short, the event study methodology serves as an indicator to enhance understanding of the implications of corporate decision-making and behaviour (Barber and Lyon, 1997; Campbell et al., 1997). The main idea of interest is to survey if post-event abnormal returns for the selected firms are statistically different from zero. Hence, event studies are excellent means to test market efficiency (Kothari & Warner, 2008).

When evaluating M&A performance, many studies tend to consider the immediate effects on the target and acquiring companies in terms of short-term gains or losses. Andrade et al. (2001) suggest that the most trustworthy statistical evidence of whether mergers benefit shareholders comes from standard short-term event studies that examine the short-term outcomes around the announcement of a deal (Dutta and Saadi, 2011). In this section, we will go over the main findings of these studies and some important things to consider.

The abnormal stock return is a critical metric to consider when analysing the profitability of a corporate event, such as a merger or acquisition. This metric measures the difference between the actual and expected returns, as described by Sorescu, Warren, and Ertekin (2017). Kiymaz and Baker (2008) have established large positive average abnormal returns to the target firms, a result which is natural, given the hefty premiums typically involved in takeovers. On the acquirer side, researchers have concluded either zero or even negative returns. In a prominent review article, Roll (1986) concludes that the null hypothesis, of zero abnormal returns to the acquirers, ought not to be rejected; and, while there has been an abundance of subsequent research articles contradicting this, the results seem to be mixed enough that Roll's conclusion appears to hold (Agrawal and Jaffe, 2000). As evidence to this, studies conducted by Eckbo

and Thorburn (2000) and Loderer and Martin (1990) indicate zero or small positive abnormal returns for acquirers, while others such as Walker (2000) and Mitchel and Stafford (2000) claim small negative returns for the acquirers.

Further supporting this consensus, Campa and Hernando (2004) suggest that the evidence regarding the returns to acquirer firms is inconclusive. They examined the results of multiple studies that looked at the cumulative abnormal returns (CARs) of European acquirer firms participating in M&A transactions and found that some studies reported negative CARs, while others reported zero or slightly positive returns. Ten of the examined studies that found negative returns varied between less than one percent and five percent, with different time windows, most of which included periods before the announcement date. These returns were statistically different from zero in most cases. In contrast, seven studies reported zero or positive returns ranging from zero to seven percent for the acquiring firms, which are relatively small compared to the returns generated by the target firms. The researchers concluded that there was an even split between studies that showed value creation and value destruction for the acquirer firms, and that due to a lack of strong evidence for either positive or negative CARs, it was not possible to make any conclusive statements at the aggregate level (Campa and Hernando, 2004).

Andriuskevicius (2019) conducted a study on value creation through M&A in the EU by calculating the CARs of firms participating in M&A activity between 2004-2017. He finds that during the three days preceding the transaction date, shareholders of the acquiring company saw a significant increase in share price of 7.08%. Furthermore, following the announcement of the merger or acquisition, the acquiring company's share price not only holds but also increases at the time of the transaction announcement. Despite the findings of Zaremba and Plotnicki (2016) regarding M&A value creation for the acquirer in Central and Eastern European countries are congruent with these results in the short run, the positive abnormal returns decrease as the time window is extended.

Goergen and Renneboog (2004) analysed M&A transactions in continental Europe between 1993-2000 and examined the short-term wealth effects on both the target and acquirer firms. They found that target firms generated announcement effects of 9%, and a statistically significant 0.7% for acquirer firms.

Meckl and Röhrle (2016) conducted a thorough examination of the recent literature on mergers and acquisitions performance. Their study focused on 33 studies published from 2004 and

onwards, covering 55,399 worldwide M&A transactions between 1950 and 2010. Notably, most of the studies included in their meta-analysis measured CARs for acquiring firms' shareholders during a three-day event window surrounding the deal announcement. According to their statistically significant findings, less than half (47.6%) of the M&A transactions studied resulted in positive announcement returns for the bidder's shareholders.

According to Dutta and Saadi (2011), earlier short-term event studies conducted on M&A transactions that occurred in the United States typically demonstrate positive returns for target shareholders, in contrast to negative or insignificant abnormal returns for acquiring firms' shareholders. Furthermore, they mention that non-U.S. studies consistently report significant and positive abnormal returns for the acquirers around the time of the deal announcement. They explain that this variation could be caused by a multitude of factors such as the relative size of the target firm and its ability to impact the acquirer's returns; abnormal returns representing only the acquisition's surprise component, and increased uncertainty of the event as the deal takes longer to conclude. The results by Dutta and Saadi (2011) are very similar to those by Tuch and O'Sullivan (2007) who conduct a similar approach in examining M&A transactions in the UK. They argue that the available evidence indicates that the announcement effect of takeovers on the acquirer is, at most, insignificant. Similarly, they also found that the latest research from other nations typically presents more favourable outcomes for acquiring firms compared to the results documented in the UK and US.

Based on this prior research, one can formulate a preliminary expectation regarding the short-term announcement effect (abnormal returns) generated by the acquiring firms. However, given the lack of research conducted on specific industries in the European M&A market, it would be interesting to observe whether acquiring firms in the manufacturing industry, whose primary source of growth is through M&As, generates any positive and significant abnormal returns. Based on the theoretical and empirical findings presented, this study anticipates observing the following hypothesis:

Hypothesis 1: Announcements of mergers and/or acquisitions will generate positive abnormal return for European manufacturing firms.

3.2 Long-Term Event Study and Hypothesis Development

One of the fundamental concerns that remains unclear in financial theory is the inadequate long-term performance of acquiring firms. Most research articles performed over the last 30 years regarding long-term post-acquisition performance indicates negative abnormal returns for the acquiring firm (See Gregory, 1997; Loughran and Vijh, 1997; Rau and Vermaelen, 1998; André et al., 2004; Dutta and Saadi, 2011).

To begin with, Gregory (1997) examines successful mergers in the UK market to survey the long-term implications of merger announcements. This article incorporates the standard event-study methodology where six models were examined. The chosen models were CAPM, Dimson-Marsh risk and size adjusted model, the simple size-adjusted model of Dimson-Marsh, two CAPM-type models extended for size effects and the Fama-French three-factor model. The main takeaway is that the long-run post-acquisition performance of acquiring firms is significantly negative, and that the result is robust towards alternative benchmark positions. More specifically, the results varied depending on model but where between -8.15% to -11.25% abnormal returns over the two-year estimation period.

In contrast, Loughran and Vijh (1997) study the US market and were the first to implement the Buy-and- Hold Abnormal Return (BHAR) methodology in research surrounding announcement effects for acquiring firms (Dutta & Saadi, 2011). The sample firms were classified depending on the characteristics of the acquisition, merger or tender offer. Further, to use as benchmark in order to calculate the five-year abnormal returns, all firms in the study were paired with control companies based on book-to-market ratio and market capitalization. To summarize, the researchers concluded that acquirers who initiate merger bids earn on average 15.9% less than corresponding control firms, however, acquirers that initiate tender offers earn 43% more than benchmarking firms.

Interestingly, several other research articles have concluded no significant abnormal return for acquirers (See Mitchell and Stafford, 2000; Dutta and Jog, 2009). Mitchel and Stafford (2000) use a long-term event study to survey the effects of mergers, seasoned equity offerings (SEOs) and share repurchases on stock price performance. The article focuses on the US market and measures abnormal returns using both the BHAR and the calendar-time portfolio approach. In essence, they find that when cross-sectional dependence is considered, no evidence of long-term abnormal returns can be established for either method, contrary to previous literature.

Moreover, Rau and Vermaelen (1998) examine the long-term post-merger performance for US companies, over the three years following the date of completion of the deal. In addition, the study benchmarks the cumulative abnormal returns relative to book-to-market and size to create 50 control portfolios. Thus, after controlling for book-to-market and market capitalization ratios, the study finds that merger bidders underperform their equally weighted control portfolios; however, tender offers earn a statistically significant abnormal return of 8.6%. When performing the comparative analysis between value acquirers, characterized by high book-to-market ratios, and glamour acquirers, characterized by low book-to-market ratios, the findings validate that value acquirers generates considerably greater abnormal returns compared to glamour acquirers.

Despite the theoretical and empirical findings presented, this study aims to observe positive long-term post-merger performance or at least that value is conserved for acquiring manufacturing firms. This is due to the special characteristics and distinct growth strategies on how value creation is accomplished within the European manufacturing industry, as previously described in the introduction. In addition, the long-term hypothesis should be consistent with the short-term, or at least, not contradict it. Assuming that the short-term value effect is not systematically wrong, long-term abnormal returns should be zero or positive. Hence, this study anticipates the following hypothesis:

Hypothesis 2: There is positive or no significant abnormal return in the long-term post-merger performance for acquiring firms in the European manufacturing industry.

3.3 Determinants of Value Creation and Hypothesis Development

3.3.1 Method of Payment: Cash Only vs. Stock Only

It is widely argued that the payment method employed in a transaction has a direct impact on the stock price of the acquirer in the market, thus giving rise to a debate surrounding the optimal payment choice that yields the greatest outcome on the bidder's stock value. Myers and Majluf (1984) concludes that the payment method used in a transaction convey distinct signals to the market. Hence, if the managers opt for stock payments, they perceive their company to be overvalued, consequently, the market reacts unfavourably to these types of deals, while cash-only transactions are followed by positive returns. In short, Martynova and Renneboog (2009) examined 1361 European deals between 1993 and 2001 and determined that transactions featuring a majority portion of stock payments elevated the investment risk and had a negative impact on the bidder's share price. Moreover, Travlos (1987) concludes that cash-only deals are associated with higher abnormal returns for the acquirer. Thus, we formulate the following hypothesis:

Hypothesis 3: Abnormal return is positively correlated with cash-only transactions.

3.3.2 Domestic vs. Cross-Border

Another well researched characteristic that affects abnormal return for the acquirer in transactions is if the deal is classified as domestic or cross-border. A domestic deal denotes instances when the acquirer procures a company located within the same country, whereas cross-border deals entail the acquisition of a company located beyond its primary borders. There is an abundance of articles studying cross-border deals, however, the results are indecisive without a clear consensus. Eckbo and Thorburn (2000) examined the US market and concluded that domestic deals indicate higher positive significant returns than cross-border deals, while Aw and Chatterjee (2004) surveyed the UK market and concluded that cross-border deals are correlated with negative abnormal return. Lastly, Mangold and Lippok (2008) researched the European market, and their results indicate that cross-border deals are associated with positive returns for the acquirer. Based on prior research, we formulate the following hypothesis:

Hypothesis 4: Cross-border transactions are positively correlated with abnormal returns.

3.3.3 Deal Diversification

Prior research on the topic indicates mixed results. Morck, Shleifer, and Vishny (1990) established evidence that the market reacts unfavourably to diversifying transactions, whilst

horizontal transactions were elevated by more than four percent, further, this is in line with the research conducted by Flanagan (1996). In contrast, Akbulut and Matsusaka (2010) surveyed a large sample between the years 1950 and 2006 and concluded that conglomerate and vertical transactions are associated with positive returns for acquiring firms. Hence, we formulate the following hypothesis:

Hypothesis 5: Focused transactions have a positive effect on abnormal return.

3.3.4 Public vs. Non-Public Target Firm

In this study, both public and private companies are included to ensure a good sample size but also to mimic the real-world behaviour of acquirers, as most target firms are private. Chang (1998) examined transactions made in the US market between the years 1981 and 1992 where 52% of the deals were private and concluded that within this subset, those involving stock-based payments resulted in positive abnormal returns, whereas non-public transactions solely based on cash exhibited zero abnormal returns. Moreover, the article revealed that acquiring shareholders' value is adversely affected by deals incorporating publicly listed targets. Draper and Paudyal (2006) analysed the UK market during the period 1980-1990 and concluded that 88% of the transactions were private targets and that they were associated with positive abnormal returns because private targets are more accepting of a lower acquisition price compared to public companies. Thus, we formulate the following hypothesis:

Hypothesis 6: Private targets are positively correlated with abnormal returns.

3.3.5 Merger Waves

Researchers such as Moeller, Schlingemann, and Stultz (2005) and Powell and Yawson (2005) argue that merger waves are observed to cluster across industry and time. Schleifer and Vishny (2003) postulate that waves are propelled by comparative valuations of target and acquiring firms, meanwhile, Garfinkel and Hankins (2011) provide empirical evidence suggesting a positive correlation between merger activity and the uncertainty surrounding future cash flows. In addition, Duchin and Schmidt (2013) conclude an increase in information asymmetry and a decline in monitoring quality during merger waves, characteristics which the researchers attribute to weak acquirer corporate governance. Finally, Bouwman, Fuller and Nain (2009) and Moeller et al., (2005) find that the value impact of merger waves is predominantly adverse with significant post-merger acquirer underperformance. Thus, by combining prior research with the graph in Appendix I, we identify the following hypothesis with merger waves:

Hypothesis 7: Deals made in one of the following merger waves have a negative impact on acquirer's abnormal return; 2003 to 2007, 2016 to 2018.

3.3.6 Relative Deal Size

According to Loderer and Martin (1990), the high deal premium and investment risk associated with large M&A deal value is negatively correlated with the performance of the acquirer. The agency and hubris theory discussed in the literature review do well in explaining this phenomenon. Moreover, lower deal value reflects positively on the acquirer's returns since target firms associated in these transactions have a higher likelihood to be well-integrated with the acquiring firm (Sudarsanam et al., 1996). We consider the deal value to total assets ratio as the explanatory variable used in the regressions. On the other hand, Kengelbach et al. (2012) find a positive and significant relationship between deal size and the acquirer's returns in their study of acquisition performance based on a global sample. Due to conflicting consensus among prior research, we formulate and expect the following hypothesis based on the recency of other studies:

Hypothesis 8: Relative deal size is positively correlated with acquirer abnormal returns.

3.3.7 Free Cashflow Per Share Over Share Price

Jensen (1986) argues in his article that firms with significant cash holdings tend to engage in more frequent acquisition activities, as a part of his *cash flow theory*. The article concludes that managers of companies with a surplus in cash reserves intend to pursue diversifying deals that mainly have a negative impact on the overall shareholder value, due to agency costs and overconfidence. In addition, as acquirer free cash flow per share is highly dependent on the firm's number of outstanding shares, we decided to divide it by its respective share price, in order to make it more comparable across firms and accurate. Thus, we postulate the following hypothesis:

Hypothesis 9: Acquirer free cash flow per share over share price is negatively correlated with abnormal return.

3.3.8 Accounting Measures

In addition to the previously introduced, and more academically surveyed determinants of value creation, we also want to examine firm specific accounting ratios/financial ratios of the acquirer and their impact on the success of the deal. The following explanatory variables and their respective hypotheses are introduced as possible indicators of the acquirer's performance.

Return on Assets (ROA) is a financial ratio typically used to evaluate financial health. It measures company profitability relative to total assets. A high *ROA* suggests that assets are used efficiently in generating profits on its investments, while a low *ROA* suggests the opposite. It could be argued that *ROA* acts as a proxy for performance of past acquisitions.

Hypothesis 10: ROA is positively correlated with abnormal returns.

Firm Size (LnMCAP), this measure is typically used to predict the future performance of a company's stock. A high value suggests that the firm is well-established and larger, while a low value suggests that the firm is newer or less established.

Hypothesis 11: LnMCAP is negatively correlated with abnormal returns.

Leverage Ratio (LEV), more specifically, the total debt to total capital ratio measures the proportion of a firm's total capital that is financed through debt. A high ratio, typically greater than 50%, suggests that a company has a greater proportion of debt financing. Since, some firms take on significant debt to perform an acquisition, this ratio is worth considering.

Hypothesis 12: Leverage is negatively correlated with abnormal returns.

Intangible Assets to Total Assets (IATA) ratio is used to assess a company's reliance on intangible assets as a source of value creation. A high intangible to total assets ratio suggests that the company's value is not primarily in its tangible assets. For example, given that goodwill, patents, and trademarks are intangible assets, generated or acquired as a result of an M&A, a high ratio could indicate that the acquirer firm is performing multiple acquisitions, possibly resulting in future asset instability.

Hypothesis 13: IATA is negatively correlated with abnormal returns.

R&D/Sales is used to evaluate a company's level of investment in R&D relative to its revenue generation. Since manufacturing firms rely on R&D to introduce new products or improve their existing ones to differentiate and remain competitive in their respective markets, this ratio could potentially explain positive firm performance. However, a too high ratio would indicate excessive R&D spending which could negatively affect the spending on production heavy tangible assets, and one should also consider the opportunity cost of hefty R&D investments.

Hypothesis 14: R&D/Sales is negatively correlated with abnormal returns.

4. Data and Methodology

In this chapter, the presentation of the sample universe and the empirical methodology will take place. First, the sampling criteria will be discussed followed by the final selections for the short- and long-term event studies. Then, the methodology for measuring abnormal returns will be introduced with suitable equations for both studies. Lastly, the respective regressions are presented.

4.1 Data Selection

The M&A data for this study was collected from the Zephyr by Bureau van Dijk database, which provides comprehensive coverage of global M&A activity, whereas historical firm-specific data, as well as market data were collected from Eikon DataStream.

Below are the criteria used for the data collection from Zephyr:

1. The M&A transaction occurred between the years 2000-01-01 and 2020-12-31.

2. The acquirer's primary industry classification is the manufacturing industry (Primary US SIC codes 20-39). Target firm is from any industry classification.

3. The acquirer is a listed company on any exchange (public). Target firm is public or private.

4. The acquirer is geographically located in Continental Europe, and the target firm from anywhere in the world.

5. The deal is defined as merger or acquisition on Zephyr Database.

6. Minimum deal size of 1 million euros.

7. The deal is labelled "completed" as on Zephyr Database.

8. The deal was paid in cash, shares, or both as described by Zephyr.

9. The acquisition size is greater than 50% of the target (majority stake acquisition).

Initially, all deals were included without any filters, resulting in 2963 deals. The collected data was then filtered based on several criteria to ensure the relevance and reliability of the sample. We limited the data to deals completed between the years 2000 and 2020, where the acquirer was from the European manufacturing industry and the target could be from any industry. First, we filtered out the deals which had missing data on both the acquirer's and target's operating

revenue, resulting in 914 deals. Next, deals that were not paid in cash, shares, or both were removed, leaving 748 deals. Only completed deals were considered, excluding completed assumed deals, which resulted in a sample of 602 deals.

To ensure the effect of the M&A announcement would have a significant impact on the acquirer, we opted to make sure that the target firm's operating revenue had to be at least 10% of the acquiring firm's operating revenue. This further reduced the sample to 345 observations. Deals with an acquisition size of less than 50% were also removed, leaving 250 deals. To make sure the short-term event study was not affected by other M&A activities, deals that occurred within six months after the completion of the previous deal were excluded. This resulted in a sample of 237 deals for the short-term event study. Finally, after the firm-specific data was obtained from DataStream, any observations with missing data were removed, resulting in a final sample of 209 deals done by 158 unique firms. The final result is illustrated by table 1.

Table 1. Summary of data selection, Short-term event study

Filter Specification	Removed observation	Remaining observation
Obtained observations (2000-2020)		2963
Incomplete observations, operating revenue	2049	914
Method of payment	166	748
Only completed deals	146	602
Target operating revenue 10% of acquirer	257	345
Majority stake (>50%)	95	250
6-month timeframe per deal	13	237
Incomplete data from DataStream	28	209
Final Selection		209

Source: Own calculations from Eikon DataStream and Zephyr

The same method of sampling as previously introduced for the short-term event study is employed for the firms in the long-term study. However, instead of a six-month timeframe per deal, it is prolonged to a twelve-month timeframe to ensure that the events do not overlap with each other during the event window, which otherwise would have caused spurious results. Thus, when all the exclusion parameters have been taken into consideration, the final selection for the long-term event study is 207 transactions, as presented in table 2.

Table 2. Summary of data selection, Long-Term Event Study

Filter Specification	Removed observation	Remaining observation
Obtained observations (2000-2020)		2963
Incomplete observations, operating revenue	2049	914
Method of payment	166	748
Only completed deals	146	602
Target operating revenue 10% of acquirer	257	345
Majority stake (>50%)	95	250
12-month timeframe per deal	15	235
Incomplete data from DataStream	28	207
Final Selection		207

Source: Own calculations from Eikon DataStream and Zephyr

The data used to formulate the accounting-based explanatory variables used in the regressions was collected from Eikon DataStream. In addition, the data corresponding to each acquiring firm in our sample was based on the announcement date of the transaction to ensure uniformity of our sample, since some firms announce and complete the deal on the same date, while others do not. Furthermore, the market data used for the event studies was based on the MSCI Europe Industrials Index and was also collected from DataStream.

Table 3 represents a summary of the sample distribution based on the data collected from Zephyr and DataStream, due to better visualization, the table is presented on the next page.

Table 3. Data sample distribution

Years	Deals	Private	Public	Cash	Stock	Focused	Cross-border
2000	6	5	1	5	1	2	4
2001	3	1	2	2	1	1	2
2002	6	4	2	3	3	1	5
2003	2	2	0	2	0	1	1
2004	19	15	4	13	6	12	7
2005	13	11	2	11	2	7	6
2006	11	8	3	7	4	6	5
2007	9	8	1	7	2	3	6
2008	6	2	4	5	1	0	6
2009	4	4	0	2	2	2	2
2010	8	4	4	4	4	2	6
2011	12	8	4	10	2	8	4
2012	11	7	4	6	5	9	2
2013	8	7	1	8	0	5	3
2014	12	7	5	8	4	5	7
2015	19	11	8	11	8	10	9
2016	7	6	1	3	4	4	3
2017	13	8	5	5	8	7	6
2018	13	11	2	11	2	6	7
2019	16	12	4	11	5	10	6
2020	11	11	0	8	3	5	6
Total	209	152	57	142	67	106	103
%		73%	27%	68%	32%	51%	49%

Source: Own calculations from Eikon DataStream and Zephyr

4.2 Short-Term Event Study

In order to measure the occurrence of short-term abnormal returns in connection with merger announcements among acquiring firms in the European manufacturing industry, and test the first hypothesis, an event study methodology will be employed. In addition, event studies are well researched empirical methods that observe the behaviour of firms' stock prices around specific corporate events (Kothari and Warner, 2007). The authors argue that in a corporate context, the usefulness of event studies arises from the fact that the size of abnormal return at the time of an event gives a reliable measure of the unanticipated impact this predetermined type of event has on shareholder wealth. Hence, event studies that centre around announcement effects within a short timeframe surrounding a specific event helps to provide relevant information for comprehending corporate actions. As a final remark, the event study methodology also serves as a decisive tool in capital market research by allowing the evaluation of market efficiency. The occurrence of non-zero abnormal security returns following a certain corporate event is considered inconsistent with the efficient market hypothesis, as stated by

Kothari and Warner (2007). The methodology is carefully summarized by MacKinlay (1997); thus, we will only present the main ideas and refer to the former for a more in-depth outline.

4.2.1 Event Window and Estimation Window

The present event study intends to investigate the immediate abnormal return, which is posited to occur within five trading days subsequent to the merger announcement. Additionally, a five-day period before the event will be added to determine whether any external factors may influence the security's return prior to the event. This event window definition is according to the parameters set by Li et al. (2013), with T expressed as the duration of the study and the announcement date of the merger is denoted as (T=0), in terms of trading days. Hence, the event window under examination spans from (T=-5) to (T=+5), including the event day, thus spanning eleven trading days. Nevertheless, the event window is flexible and can easily be customized to incorporate days that a researcher might desire, i.e., a three-day event window can be used to replicate Meckl and Röhrle (2016). Lastly, the estimation period covers 120 trading days, from (T=-125) to (T=-5), and so follows MacKinlay's (1997) criteria. In total, the event study timeline incorporates 131 trading days, as illustrated in figure 1.

Figure 1. Event window and estimation period illustration
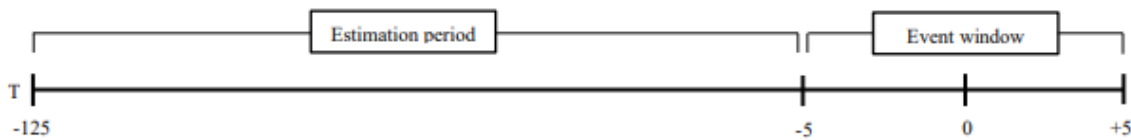
4.2.2 Formulas for Estimating Abnormal Return

All the presented calculations in the event study will adhere to the procedures as instructed by MacKinlay (1997). The assessment of the event's impact requires a quantifiable measure of abnormal returns, which involves calculating the difference between the observed security return during the event window and the expected normal return of the security over the same period. Moreover, the normal return is defined as the expected return in absence of the event, the merger announcement. This calculation is illustrated in equation (1).

$$AR_{iT} = R_{iT} - E(R_{iT}|X_T) \tag{1}$$

More specifically, AR_{iT} represents the abnormal return for a given firm i over the specified time period T. R_{iT} is the observed return for firm i during time period T, while $E(R_{iT}|X_T)$ refers to the normal returns, and X_T denotes the conditioning information for the normal model. Hence, to calculate the abnormal return one must first estimate the normal return.

As presented by MacKinlay (1997), various modelling options are available for estimating the normal return, nevertheless, this study will adopt the *Market Model*, where X_T is the market return. Under the assumptions in the *Market Model*, it is feasible to calculate the returns for security i during time period T. As presented by MacKinlay (1997), the implementation of the market model for normal returns is described in equation (2).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{2}$$

R_{it} denotes the return of security i under time period t, whereas R_{mt} is the marker return over the same time period, and lastly, the model's error term is expressed as ε_{it}. In addition, the parameters α_i and β_i are estimates of the non-systematic risk inherent in security i. As a proxy for the market portfolio the MSCI Europe Industrials Index is used, as it is deemed the most accurate index for European manufacturing firms.

Furthermore, the market model is a statistical technique which creates a correlation between the return of a particular security and the return of the market portfolio. The linear specification of the model follows from the underlying assumption of joint normality of security returns, hence culminating in the estimates $var(\varepsilon_{it}) = \sigma_{\varepsilon_t}^2$ and $E(\varepsilon_{it} = 0)$, and when slightly rearranged, equation (3) is finalized.

$$\sigma^2(AR_{iT}) = \sigma_{\varepsilon_i}^2 \tag{3}$$

$\sigma^2(AR_{iT})$ represents the variance in abnormal return for security i over time T, while $\sigma_{\varepsilon_i}^2$ refers to the variance of the error term associated with security i.

Upon computation of the normal return for the securities included in the sample with respect to the specified event window, abnormal return can be derived by applying equation (4).

$$AR_{it} = R_{it} - \widehat{\alpha_\iota} - \widehat{\beta_\iota} R_{mt} \tag{4}$$

AR_{it} refers to the abnormal return, R_{it} is security i's return during the period t, and $\widehat{\alpha_\iota} + \widehat{\beta_\iota} R_{mt}$, is the normal return for security i over period t.

Furthermore, when abnormal return is estimated for all securities within the event window, AAR is calculated as described in equation (5).

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{5}$$

AAR_t denotes the average abnormal return during time period t, whilst AR_{it} refers to the abnormal return for security i under the same period, and N is the total number of observations.

In order to investigate the cumulative abnormal return for selected time intervals within the event window, CAR is estimated in accordance with equation (6).

$$CAR_{i,t1,t2} = \sum_{t=t1}^{t2} AR_{i,t} \tag{6}$$

$CAR_{i,t1,t2}$ illustrates the cumulative abnormal return for security i during the specified time interval $[t1, t2]$, while $AR_{i,t}$ still refers to the abnormal return for firm i, over time period t.

As a final remark, to enable conclusions surrounding the relationship between merger announcements and abnormal return, one must estimate $CAAR$, as an individual observation is insufficient to depict the overall pattern (MacKinlay, 1997). Thus, equation (7) describes this estimation.

$$CAAR_{(t1,t2)} = \sum_{t=t1}^{t2} AAR_t \tag{7}$$

$CAAR_{(t1,t2)}$ is defined as the cumulative average abnormal return from period $t1$ to $t2$ and AAR_t is as before, the average abnormal return during time period t.

4.2.3 Test of Significance

The announcement of mergers and/or acquisitions will generate positive abnormal return for European manufacturing firms. To evaluate if this hypothesis is true, a t-test as proposed by MacKinlay (1997) will be conducted. This statistical test enables the confirmation of whether the cumulative average abnormal return is significantly different from zero. Under the null hypothesis, there is no associated abnormal return in conjunction with the examined event, and its rejection is depending upon the significance test reaching a critical value set by the chosen significance level, as stated by Kothari and Warner (2007). Furthermore, the t-test as described by MacKinlay (1997) necessitates the calculation of the variance for AAR in accordance with equation (8). Lastly, the variance of $CAAR$ is calculated according to equation (9), and finally, determining the t-value with equation (10).

$$var(AAR_t) = \frac{1}{N^2}\sum_{i=1}^{N}\sigma_{\varepsilon_i}^2 \qquad (8)$$

$$var(CAAR_{t1,t2}) = \sum_{t=t1}^{t2} var(AAR_t) \qquad (9)$$

$$\theta_1 = \frac{CAAR_{(t1,t2)}}{\sqrt{var(CAAR_{(t1,t2)})}} \sim N(0,1) \qquad (10)$$

In the equations above, $var(AAR_t)$ denotes the variance in average abnormal return during period t, whilst $\sigma_{\varepsilon_i}^2$ signifies the variance in abnormal return during the estimation period for security i, with N representing the number of observations. In addition, $var(CAAR_{t1,t2})$ refers to the variance in the cumulative average abnormal return over period $t1$ to $t2$, and finally, θ_1 is the t-value of the test.

4.3 Long-Term Event Study

In the past few years, the characteristic-based matching-approach, also known as the buy-and-hold abnormal returns (BHAR), has been widely used, as indicated by the works of Ikenberry, Lakonishok, and Vermaelen (1995), Barber and Lyon (1997), Lyon, Barber, and Tsai (1999), just to name a few. In addition, a favourable feature of applying the BHAR approach as presented by Kothari and Warner (2008), is its capability to replicate an investor's real-life investment experience. However, the joint-test issue persists as any inference on the basis of the BHAR approach relies upon the assumption that event firms differ from otherwise similar non-event firms solely that they went through the specified event.

This study will adhere to the calculations as presented by Barber and Lyon (1997). The estimation of buy-and-hold abnormal returns (BHAR) approach incorporates deducting the compounded expected return of a suitable benchmark from the compounded return of an event firm. Thus, the calculation of BHAR is conducted in accordance with equation (11), as presented by Barber and Lyon (1997).

$$BHAR_{i\tau} = \prod_{t=1}^{\tau}[1 + R_{it}] - \prod_{t=1}^{\tau}[1 + E(R_{it})] \qquad (11)$$

$BHAR_{i\tau}$ refers to the buy-and-hold abnormal return for security i at time τ, R_{it} denotes the return of firm i at time t, whilst $E(R_{it})$ is the expected return for firm i at time t, which is the benchmark portfolio (firm).

According to previous studies, the best benchmark to utilize in the BHAR method would be the control-firm approach, i.e., identifying a non-event firm that is closest to an event firm on the basis of market capitalization of equity, past one-year return or book-to-market ratio (See Barber and Lyon 1997; Kothari and Warner 2008). This approach is feasible in a large and mature market as in the US, however, to find matching firms in each of the European countries involved in this study would be extremely tedious and almost impossible. Thus, we argue for the use of the market model instead, where we pick the MSCI Europe Industrials Index as the most suitable benchmark for calculating the expected returns with the CAPM model, equation (12). In addition, this is the same index as the one in the short-term event study, hence, comparison between the two methods will be accurate.

$$E(R_{it}) = \alpha_i + \beta_i(R_{mt}) + \varepsilon_{it} \qquad (12)$$

Moreover, in the original paper presented by Barber and Lyon (1997), they used a time horizon of one to five years in order to estimate BHARs. However, this study contends that utilizing a prolonged time window increases the risk of exogenous factors interfering with the results, consequently, we opt to employ an estimation window of six-months and an event window of one-year.

Finally, in order to test hypothesis two, we need to conduct a test of significance to examine whether acquiring European manufacturing firms produce long-term abnormal returns. Thus, we test if the average BHAR is significantly different from zero. The corresponding test statistic is expressed by equation (13), while equation (14) describes how to calculate the variance of buy-and-hold abnormal returns as the standard deviation is needed in the test statistic.

$$t_{BHAR} = \frac{\overline{BHAR}}{\sigma(BHAR_{\tau1,\tau2})/\sqrt{N}} \qquad (13)$$

$$\widehat{\sigma^2_{BHAR_{\tau1,\tau2}}} = \frac{1}{N-1} \sum_{i=1}^{N}\left(BHAR_{i,\tau1,\tau2} - \frac{1}{N}\sum_{i=1}^{N} BHAR_{i,\tau1,\tau2}\right)^2 \qquad (14)$$

t_{BHAR} refers to t-value of the test, $\overline{BHAR}$ is the average buy-and-hold abnormal return, $\sigma(BHAR_{\tau1,\tau2})$ denotes the estimated standard deviation of buy-and-hold abnormal return between time period $T1$ and $T2$, whilst N is the number of observations. In addition,

$\sigma^2_{\widehat{BHAR_{\tau1,\tau2}}}$ is the estimated variance of BHAR between period $T1$ and $T2$ and lastly, $BHAR_{i,\tau1,\tau2}$ is the buy-and-hold abnormal return for firm i between the same period.

4.4 Explanatory Regression

In order to survey the relationship between the dependent variable, the abnormal return, and the chosen explanatory variables, this study employs a conventional ordinary least square (OLS) methodology. Thus, we assume independence amongst all of the transactions involved in the sample. The variables are presented below, equation (15) represents the short-term event study, and equation (16) depicts the long-term event study. However, due to the fact that many companies do not report research and development spending over sales, and we consider it an important measure, four different regressions will be performed in STATA. Hence, they are organized as follows: Reg.1 represents the short-term event study without $RDSales_i$ while, Reg.2 is the same study but it includes only the transactions where we have the $RDSales_i$ ratio as well; by implication, Reg.3 shows the long-term event without $RDSales_i$ while Reg.4 drops all transactions which do not present the $RDSales_i$ ratio.

$$CAR_{i,-1,+1 \, [Short \, term]} = \alpha + \beta_1 FCF_i + \beta_2 IATA_i + \beta_3 Focused_i +$$
$$\beta_4 Private_i + \beta_5 Cash_i + \beta_6 CBD_i + \beta_7 MWAV_i + \beta_8 ROA_i + \beta_9 DVTA_i + \beta_{10} LEV_i +$$
$$\beta_{11} LnMCA \, P_i + [\beta_{12} RDSales_i] + \varepsilon_i \qquad (15)$$

$$BHAR_{i,1 \, year \, [Long \, term]} = \alpha + \beta_1 FCF_i + \beta_2 IATA_i + \beta_3 Focused_i +$$
$$\beta_4 Private_i + \beta_5 Cash_i + \beta_6 CBD_i + \beta_7 MWAV_i + \beta_8 ROA_i + \beta_9 DVTA_i + \beta_{10} LEV_i +$$
$$\beta_{11} LnMCA \, P_i + [\beta_{12} RDSales_i] + \varepsilon_i \qquad (16)$$

Where the dependent and independent variables are described as follows:

- $CAR_{i,-1,+1}$, the dependent variable in equation (15), is the cumulative abnormal return from one day before the merger announcement until one day after for firm i, in the short-term event study.
- $BHAR_{i,1 \, year}$, the dependent variable in equation (16), which is the buy-and-hold abnormal return over one-year for firm i, for the long-term event study.
- FCF_i is the acquirer's free cashflow per share divided by share price.
- $IATA_i$ is the acquirer's intangible assets over total assets.

- $Focused_i$ is a dummy variable equal to 1 if the acquirer and the target company both have the first two digits in their SIC code (Standard Industry Code) between the numbers 20 and 39, thus both belonging to the manufacturing industry, and 0 otherwise.
- $Private_i$ is a dummy variable equal to 1 if the target is a private company, and 0 if the target is a public or listed company.
- $Cash_i$ is a dummy variable equal to 1 if the deal payment method is only with cash, and 0 otherwise.
- CBD_i is a dummy variable equal to 1 if the deal is cross-border, and 0 if the deal is domestic.
- $MWAV_i$ is a dummy variable equal to 1 if the deal occurred between the previously stated merger wave years; 2003 to 2007, or 2016 to 2018, and 0 otherwise.
- ROA_i is the acquirer's return on assets.
- $DVTA_i$ is the relative deal size (deal value to total assets).
- LEV_i is the acquirer's leverage ratio (total debt to total capital).
- $LnMCAP_i$ is the natural logarithm of the acquirer's market capitalization.
- $RDSales_i$ is the acquirer's research and development spendings over total revenue.
- ε_i is the residual term.

Furthermore, VIF tests will be performed accompanied by correlation matrices to ensure that the data does not suffer from multicollinearity. In addition, some of the aforementioned variables will be winsorized to account for outliers/extreme values, and finally, descriptive statistics will be presented.

5. Empirical Results

The subsequent section provides an exhibition of the empirical findings arising from the short-term event study, the long-term event study, and lastly, the regression outputs are presented which lay the foundation for further analysis.

5.1 Short-Term Event Study

Table 4 illustrates the average abnormal return (AAR) for publicly listed European manufacturing firms during the time of the merger announcement in the previously defined event window. Hence, a total of 209 announcements were included in the study.

*Table 4. Average Abnormal Returns in conjunction with merger announcements*

Days	AAR	T-ratio AAR	Significance level
-5	0.42%	2.269	5%
-4	-0.4%	-1.287	
-3	-0.12%	-0.645	
-2	0.15%	0.786	
-1	0.13%	0.691	
0	1.84%	9.958	1%
1	0.55%	2.951	1%
2	0.07%	0.355	
3	-0.1%	-0.545	
4	-0.26%	-1.401	
5	-0.07%	-0.375	

Source: Own calculations from Eikon DataStream and STATA

The event window consists of eleven days in total and each day is accompanied by its respective average abnormal return and significance level. One can observe that the AAR for the merger announcement (day 0) is estimated at 1.84% and that this measure is statistically significant at the 1% significance level. Furthermore, the subsequent day to the announcement (day 1) also postulates an abnormal return of 0.55% which is significant at the 1% significance level. However, directly after day 1, the AAR decreases, and no statistical significance can be detected. Lastly, the first day in the event window (day -5) also exhibits a statistically significant abnormal return at the 5% significance level, after which significance is lost until the announcement day.

Figure 2 depicts the average abnormal return in percent during the entire event window.

Figure 2. Average Abnormal Returns in conjunction with merger announcements
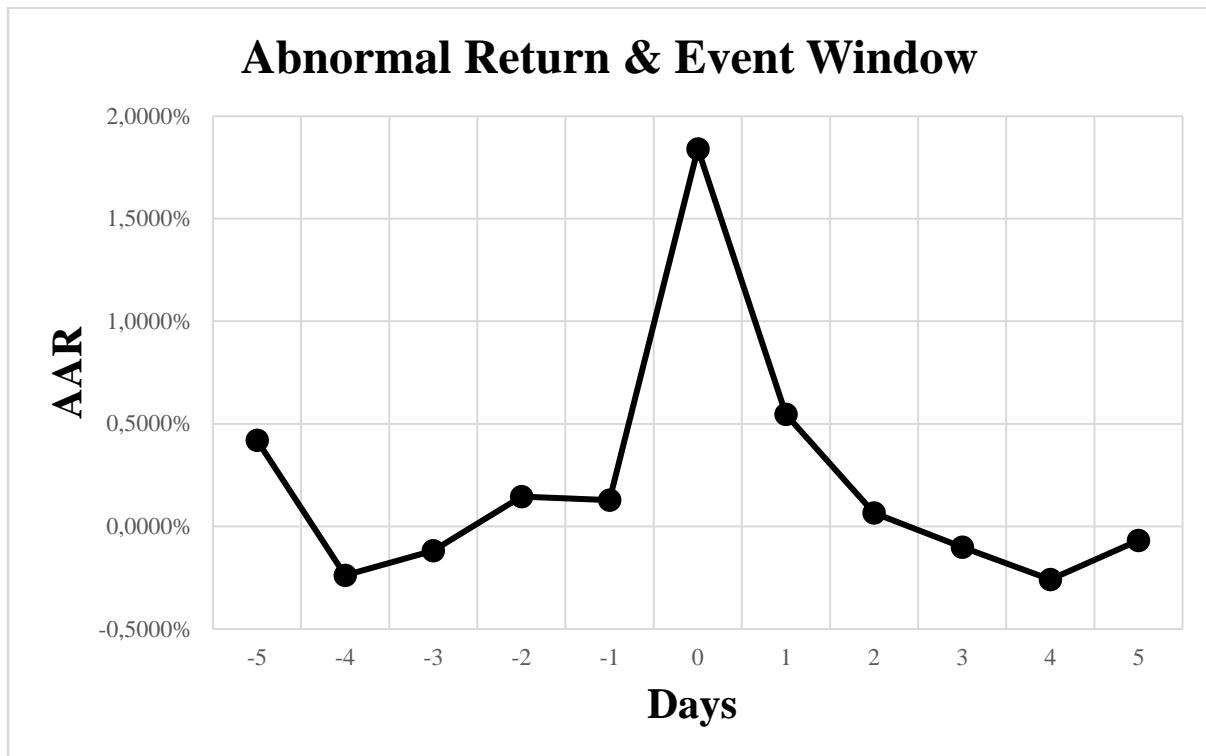
As illustrated by the figure, the average abnormal return increases from one day prior to the merger announcement (day -1) until the event day itself (day 0). Thus, during the two-day period under examination, the AAR experienced its most substantial growth, which is measured from 0.13% to 1.84%, a positive change of 1.71 percentage points. It is also noteworthy that the steepest decline during the event window occurred at the day after the announcement (day 1), a negative difference of 1.3%. Furthermore, this figure lays the foundation for the dependent variable in the short-term regressions, the cumulative abnormal return, CAR. This can be attributed to the fact the figure depicts the average abnormal return day by day. Hence, one can determine which days to include in the cumulative abnormal return for each firm i to investigate the variations in the returns. This study concludes that the dependent variable $CAR_{i,-1,+1}$ is the most suitable one to use in the subsequent regressions. In addition, all sample $CAR_{i,-1,+1}$ observations are presented in Appendix II, where they are plotted against their respective announcement date of the transaction to get a better visualization of the different returns across time.

As previously depicted in table 4, one can see that the results from the short-term event study indicate the presence of an average abnormal return for the first day in the event window (day -5), the announcement date (day 0), and finally the subsequent day of the event (day 1). To further investigate this occurrence, we will examine and statistically test the cumulative average abnormal return for seven chosen time periods under the event window in Table 5.

Table 5. Cumulative Average Abnormal Returns in conjunction with merger announcements

Period	CAAR	T-ratio CAAR	Significance level
[-5, 5]	2.36%	3.846	1%
[-5, -1]	0.34%	0.811	
[-2, 2]	2.73%	6.592	1%
[-1, 0]	1.97%	7.530	1%
[-1, 1]	2.51%	7.852	1%
[0, 1]	2.39%	9.128	1%
[1, 5]	0.18%	0.441	

Source: Own calculations from Eikon DataStream

Table 5 depicts the cumulative average abnormal return in conjunction with merger announcements for different time periods. When observing the entire event window, consisting of five days prior and five days subsequent to the public announcement of a merger, the cumulative average abnormal return is estimated at 2.36% with a T-ratio of 3.846, which makes it statistically significant at the 1% significance level. However, it is noteworthy that the time period before the announcement (day -5 to -1), and the days following the event (day 1 to 5), stipulates an abnormal return of 0.34% and 0.18% respectively, but none of these findings are statistically significant. The results for the time periods (day -2 to 2), (day -1 to 0), (day -1 to 1) and (day 0 to 1) all indicate statistical significance at the 1% significance level. Furthermore, the previously aforementioned time intervals measure a cumulative average abnormal return of 2.73%, 1.97%, 2.51% and 2.39% respectively. As a final remark, these findings once more strengthen the case of the chosen time interval for the dependent variable in the short-term, $CAR_{i,-1,+1}$.

5.2 Long-Term Event Study

Table 6 illustrates the average buy-and-hold abnormal return (BHAR) for publicly listed European manufacturing firms during the time of the merger announcement in the long-term event window. Hence, a total of 207 announcements were included in this examination.

Table 6. Average buy-and-hold abnormal return in conjunction with merger announcements

Period	(Average) $\overline{BHAR}$	T-ratio $\overline{BHAR}$	Significance level
1 year	-14.93%	- 4.176	1%

Source: Own calculations from Eikon DataStream and STATA

The event window in the long-term study consists of 252 trading days (1 year) and is accompanied by its sample average buy-and-hold abnormal return and corresponding significance level. One can observe that the average BHAR for the entire holding period is estimated to be negative 14.93% and that this estimate is statistically significant at the 1% significance level. As previously done for the dependent variable in the short-term study, Appendix III depicts all sample $BHAR_{i,1\ year}$, where they are plotted against their respective announcement date of the merger to visualize the returns over time. In addition, to illustrate the average buy-and-hold abnormal return day by day during the event window, figure 3 was created.

Figure 3. Average buy-and-hold abnormal return day by day.
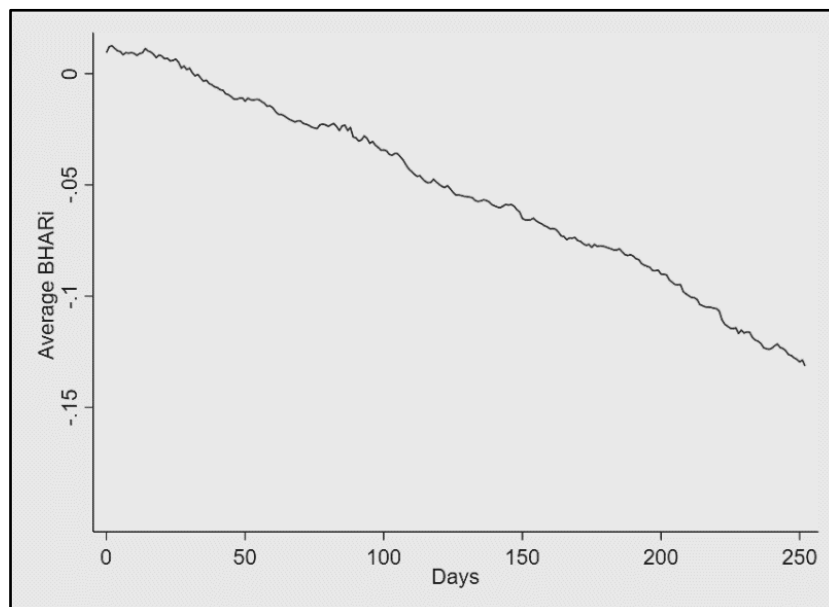
Source: Own calculations from Eikon DataStream and STATA

5.3 Explanatory Regressions

In the final selection for the regressions, a number of observations were removed due to incomplete matching data from DataStream. Thus, Reg.1 consists of 197 observations, Reg.2 incorporates 110 observations, Reg.3 has 196 observations, while Reg.4 has a final size of 109 observations. To ensure that the regressions do not suffer from multicollinearity, a variance inflation factor test (VIF test) will be performed for each. Appendix IV and Appendix V presents the VIF results for both the short- and the long-term studies. Ringle, Wende, Becker (2015) and Hair et al., (1995) argue that if a VIF value is greater than 5 or less than 0.2, then multicollinearity is present within the regression. As one can observe, none of the variables for the regressions fall outside these boundaries, thus we detect no signs of multicollinearity. Moreover, in order to check for cross-correlation among the explanatory variables, four correlations matrices were constructed, one for each regression, as presented by Appendix VI to IX. The maximum absolute correlation is 0.46, present in Reg.4. According to Siegel (2016), and in general, an absolute correlation coefficient greater than 0.7 in any pair of explanatory variables would indicate the presence of multicollinearity. Thus, once more, we dismiss multicollinearity problems in the data set.

In addition to the previously mentioned precautions, the study also accounts for heteroscedasticity in our sample, the regressions are performed with robust standard errors, which is necessary if one might consider that the data has heteroskedastic properties. Moreover, descriptive statistics for each regression is presented in Appendix X to XIII. As a final remark, some of the variables in the regressions have extreme values/outliers which are going to affect the results negatively. In order to mitigate this risk, and not get spurious regressions, we winsorize the problematic variables depending on their distribution. In table 7 one can see the winsorized variables accompanied by the degree of the winsorizing. In Appendix XIV to XX, we present the distributions before and after the winsorizing for each variable.

Table 7. Winsorized Variables

Variable	Winsorizing Fraction
$CAR_{[-1,+1]}$	0.02
$BHAR_{1\ year}$	0.05
$DVTA$	0.05
LEV	0.05
ROA	0.01
FCF	0.02
$RDSales$	0.03

Source: Own calculations from Eikon DataStream and STATA

Table 8 illustrates the four different regressions and their respective results performed with robust standard errors.

Table 8. OLS Regression results using robust standard errors

	Short-Term		Long-Term	
	Reg.1	Reg.2	Reg.3	Reg.4
	$CAR_{[-1,+1]}$	$CAR_{[-1,+1]}$	$BHAR_{1\,year}$	$BHAR_{1\,year}$
Constant	0.019	0.088*	-0.386	0.273
	(0.54)	(2.39)	(-1.14)	(0.63)
FCF	-0.025	-0.057	0.371	0.781
	(-0.31)	(-0.49)	(0.66)	(0.80)
IATA	0.018	0.037	0.141	0.231
	(0.71)	(1.11)	(0.68)	(0.85)
Focused	0.009	0.008	0.153[+]	0.092
	(0.94)	(0.74)	(1.74)	(0.75)
Private	0.027**	0.006	0.039	-0.064
	(2.72)	(0.51)	(0.44)	(-0.53)
Cash	-0.012	-0.033*	0.069	0.051
	(-1.09)	(-2.36)	(0.79)	(0.43)
CBD	0.010	-0.001	-0.095	-0.159
	(0.96)	(-0.05)	(-1.05)	(-1.44)
MWAV	-0.007	0.005	-0.057	-0.072
	(-0.89)	(0.46)	(-0.75)	(-0.72)
ROA	0.000	0.000	-0.004	-0.001
	(-0.19)	(-0.38)	(-0.72)	(-0.12)
DVTA	0.012	0.002	0.094	0.072
	(0.62)	(0.09)	(0.63)	(0.39)
LEV	0.000	0.000	0.000	0.000
	(0.50)	(-0.91)	(0.05)	(0.04)
LnMCAP	-0.002	-0.003	0.005	-0.025
	(-0.90)	(-1.43)	(0.27)	(-1.07)
RDSales		-0.002*		-0.004
		(-2.51)		(-0.49)
R^2	0.079	0.241	0.039	0.096
$F statistic$	1.76	2.37	0.71	0.69
N	197	110	196	109

Source: Own calculations from Eikon DataStream and STATA
Note: Significance levels: $^+ p < 0.1$, $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$. (t-stat in parentheses)

Table 8 displays the results of the OLS regression analysis, which includes both the short- and long-term regressions conducted using the variables previously provided and discussed in section 3.3. The table presents the coefficients and t-statistics (in parentheses) for each OLS

regression model performed with robust standard errors and based on the respective final samples. The dependent variable in our analysis is the acquirer's CAR, over the event window $[-1, +1]$, in addition to the $BHAR$ over the one-year event window, depending on the time horizon.

The results reveal that a positive and statistically significant relationship exists between $Private$ and CAR in Reg.1 at the 1% significance level with a coefficient of 0.027 and a t-value of 2.72. Reg.2, which includes $RDSales$ as an explanatory variable exhibits a negative and statistically significant relationship between $Cash$ and CAR at the 5% significance level with a coefficient of -0.033 and a t-value of -2.36, in addition to a negative and statistically significant relationship between $RDSales$ and CAR at the 5% significance level with a coefficient of -0.002 and a t-value of -2.51. It is worth noting that the intercept in Reg.2, better known as α, is positive and statistically significant at the 5% significance level with a coefficient of 0.088 and a t-value of 2.39. As a final note, the variable $Focused$ in Reg.3 is statistically significant with the dependent variable $BHAR_{1\ year}$ at the 10% significance level with a coefficient of 0.153 accompanied by a t-value of 1.74.

No other significance was found in the relationship between our other independent variables and our respective dependent variables, $CAR_{[-1,+1]}$ and $BHAR_{1\ year}$.

6. Analysis and Discussion

In this chapter, the empirical results and the hypotheses of the study will be analyzed and compared to previous academic articles and literature.

Hypothesis 1: Announcement of mergers and/or acquisitions will generate positive abnormal return for European manufacturing firms.

Firstly, the empirical results indicate, as illustrated in table 4, the presence of abnormal return in conjunction with merger announcements. By observing the first day in the event window (day -5), the day after the announcement (day 1) and the event day itself (day 0), we find positive average abnormal return of 0.42%, 0.55% and 1.84% respectively, all three being statistically significant. These results are consistent with earlier and later empirical studies, as evidenced by research conducted by Loderer and Martin (1990), Eckbo and Thorburn (2000), Goergen and Renneboog (2004), and most recently Andriuskevicius (2019). Furthermore, these results indicate that a substantial part of the positive market reaction occurs near the firm's official announcement of the transaction. However, it is noteworthy that the first day in the event window (day -5) exhibits a statistically significant return at the 5% significance level. This might be a consequence of potential information leakage regarding the announcement and thus, the market reacts favourably. On the other hand, none of the subsequent days prior to the announcement exhibits any statistically robust results, hence we may draw the conclusion that the information leakage in the sample is negligible. Secondly, on the basis of the previously mentioned findings and with the purpose of specifically evaluating hypothesis one, we estimated the cumulative average abnormal return for a selected set of seven-time intervals, in order to further detect evidence which, support or disregard the hypothesis. As presented in table 5, our analysis indicates the presence of abnormal return during the entire event window (day-5 to 5) at a significance level of 1%. Nevertheless, in the specified pre-event time interval (day -5 to -1) and post event interval (day 1 to 5) our findings failed to establish any statistical significance. Conversely, the time periods in proximity and which include the event day itself (day 0), exhibit evidence of abnormal return for all the five observed periods at the 1% significance level. This is due to the announcement day being highly significant with a T-ratio of 9.958, hence we once more conclude that a substantial part of the positive market reaction centre near the firm's official announcement of the deal. Thus, this survey finds empirical results that support hypothesis one, positive abnormal return in connection with merger announcements can be established for European manufacturing firms.

Hypothesis 2: There is positive or no significant abnormal return in the long-term post-merger performance for acquiring firms in the European manufacturing industry.

The empirical findings of this study stipulate, as illustrated in table 6, the presence of negative abnormal return in conjunction with merger announcements and the further specified holding period of the stock. By observing the entire event window, consisting of 252 trading days (1 year), we detect a negative average buy-and-hold abnormal return of 14.93%. These results are consistent with earlier and later empirical studies, as evidenced by research conducted by Gregory (1997), Loughran and Vijh, (1997), Rau and Vermaelen (1998), André et al., (2004) and, Dutta and Saadi (2011). However, with these results we are forced to disregard hypothesis two. Initially, we thought that the special characteristics of the European manufacturing industry would result in a positive or at least value conserving buy-and-hold abnormal return on average. These characteristics were argued to be: improving ones balance sheet while simultaneously achieving a competitive edge through M&As; organic growth is slow in the manufacturing industry, thus many companies view M&As as an effective mean for accelerating stagnating growth; manufacturing companies themselves stated that portfolio expansion, geographic expansion and consolidation were mostly reliant on performing M&As; manufacturing firms engage in M&As in order to innovate and maintain their competitiveness by searching and acquiring new technology, attaining economies of scale and to further expand R&D capabilities; and lastly, by combining the aforementioned reasons, one would believe that this constant strive for growth has resulted in an increased competition, hence necessitating manufacturing firms to pursue on average, value-creating transactions in order to remain competitive in the long-term (See Hartman Executive Advisors; Financier Worldwide, 2020; Thanos and Papadakis 2012). However, these arguments do not show to have an impact on the average buy-and-hold abnormal return for our sample, rather the opposite. One possible explanation may be that this competitiveness within the industry forces managers to constantly search for acquisitions in order to excel. However, these might be value-destroying on average but the managers exhibit herding behaviour, all their competitors are involved in such transactions, consequently, no firm wants to lose their position in the industry, hence they still engage in the acquisitions. Thus, this study finds no empirical support for hypothesis two, there is no positive abnormal return nor any value preserving characteristics for European manufacturing firms who announced and completed merger plans during the specified event window.

Hypothesis 3: Abnormal return is positively correlated with cash-only transactions.

As illustrated by table 8, the $Cash$ coefficient for the short- and long-term regressions indicate opposite correlations with the dependent variable. To begin with, the coefficient for the explanatory variable is negative in Reg.1 and Reg.2, however, only the coefficient in Reg.2 is statistically significant at the 5% significance level. This intuitively means that if the transaction is purely paid in cash the abnormal return decreases by 3.3%. Our findings are contradictory to prior research conducted by Myers and Majluf (1984), Travlos (1987), and Martynova and Renneboog (2009). Thus, we find no support for hypothesis 3, rather the opposite, we conclude that cash-only transactions have a negative impact on the acquirer's abnormal return. This result may arise from an abundance of different effecting factors. Firstly, if the transaction is large and purely paid in cash, the acquiring company is receding its opportunity to invest that cash in other potentially more profitable endeavours in the near future. Thus, if the market deems the transaction to be overpaid and the opportunity cost for the acquirer too hefty, this will have a negative effect on the firm's return. Secondly, cash is a highly liquid asset which easily may be used for a variety of purposes, such as investing in new internal projects or funding day-to-day operations. Hence, if the cash premium paid is too high, the acquirer might have problems funding its core operations or vital internal projects, thus this brings uncertainty to investors, which in turn is seen as unfavourable by the market.

Conversely, in the long-term, the cash-only transactions seem to be more in line with the theory as suggested by Myers and Majluf (1984). The coefficients are positively related to abnormal return; however, they are not statistically significant. A likely reason is that the signalling effect is weak within the European countries, this could also explain why the financing specifications of the transaction appears irrelevant to the creation of value in the long run.

Hypothesis 4: Cross-border transactions are positively correlated with abnormal returns.

As one can observe from the regression results, the CBD coefficients are negative for all regression specifications expect in Reg.1, where it is positive. However, it is noteworthy to state that none of the variables are statistically significant, hence it is difficult to conclude that there are any significant differences between domestic and cross-border transactions. Thus, on the basis of these results, we find no support for hypothesis 4, cross-border transactions are not positively correlated with abnormal returns. Since, the previous literature on the subject is inconclusive our results are in line with the research conducted by Mangold and Lippok (2008) in the short-term, while in the long-term, our results are according to Aw and Chatterjee (2004).

However, further analysis within the subject is deemed fruitless since none of the coefficients are statistically significant.

Hypothesis 5: Focused transactions have a positive effect on abnormal return.

As evidenced by the regression output, the *Focused* coefficients for the short- and long-term studies all display the same sign, positive. Moreover, Reg.3 exhibits a statistically significant coefficient of 0.153 at the 10% significance level. Thus, we find evidence in support of hypothesis 5, focused transactions are positively correlated with abnormal return in the long-term, Reg.3. The literature and prior research regarding focused deals is inconclusive with contradictory results, hence no norm can be established. However, the results of this study are in accordance with research conducted by Morck, Shleifer, and Vishny (1990) who argue that horizontal mergers are preferred, conversely, we are contradicting the results of Akbulut and Matsusaka (2010). Our findings may suggest that the market deems focused transactions in the long-term as value creating through the acquirer's potential to increase its market power, reduce competition and attain greater bargaining power towards customers and suppliers.

Hypothesis 6: Private targets are positively correlated with abnormal returns.

As the regression analysis exhibits, the *Private* coefficients indicate a positive relation to the dependent variable, except for Reg.4, where it is negative. However, only the coefficient in Reg.1 is statistically significant at the 1% significance level. This intuitively means that if the target is private, the abnormal return for the acquirer increases by 2.7%. These results are in accordance with previous research conducted on the subject, such as Chang (1998), and Draper and Paudyal (2006). Thus, based on the empirical results of this study, we find evidence in support of hypothesis 6, private targets are positively correlated with abnormal returns. This result may depend on a collection of different factors. Firstly, as stated in the literature review, transactions which includes private targets are associated with positive abnormal return because they are more inclined to accept a lower acquisition price compared to public companies. In addition, private target firms may possess valuable and unique assets or capabilities which are not readily available to public firms, hence creating competitive advantages.

In the long-term, Reg.3 and Reg.4, the coefficients display opposite correlations with the dependent variable. However, the results are not statistically significant and convey ambiguous results, thus further analysis cannot be provided for those variables.

Hypothesis 7: Deals made in one of the following merger waves have a negative impact on acquirer's abnormal return; 2003 to 2007, 2016 to 2018.

The result of our regressions exhibits a negative but weak relationship between merger waves and abnormal returns for all regression specifications except Reg.2. These results are in line with prior literature (See Duchin and Schmidt 2013; Bouwman, Fuller and Nain 2009; Moeller et al., 2005). However, given that the results are not statistically significant, and that the relationship is weak, we thus find no support for hypothesis 7. Had these findings been significant, one possible reason for this could be identified by the merger wave periods we previously specified. The years 2003-2007 (pre-financial crisis) and 2016-2018 witnessed a surge in M&As in terms of the number of deals as well as their respective value or size which may have resulted in an increase in information asymmetry and a decline in monitoring quality. As a result, these factors may have some explanation regarding their effects on acquirer's abnormal returns during the period. The exception in Reg.2 where the coefficient was positive can be attributed to the lower sample size and data that could be more in favour of a flipped variate of hypothesis 7. However, the results are not statistically significant and convey ambiguous results, thus further analysis cannot be provided for these variables.

Hypothesis 8: Relative deal size is positively correlated with acquirer abnormal returns.

Our initial observation is that deal value relative to total assets of the acquirer has a modest positive but insignificant linear relationship with CAR in the $[-1, +1]$ window. This relationship holds true for all four regression specifications. While these findings are insignificant, they are in line with the findings of Kengelbach et al. (2012). Thus, we find no support for hypothesis 8. The intuition behind these results is such that larger deals increase the acquirer's level of risk, implying that the deal should yield a higher return. Another argument is that larger deals have a greater effect on share prices and signal confidence to the market (Hayward, 2002).

If these findings were significant, a possible explanation for the higher coefficients in the long-term could be that the transaction enables the acquirer to enter new markets, acquire new technologies, and achieve economies of scale, thus reflecting positively and to a higher degree in the long-term, given the time to materiality of these are not apparent in the short-term. Lastly, it could indicate that the monetary size of the deal was correctly valued, or in other words, that the acquirer got a "good deal" and made the most out of the transaction and price paid, hence its effects are positively reflected in the long-term. However, the results are not statistically

significant and convey ambiguous results, thus, further analysis cannot be provided for these variables.

Hypothesis 9: Acquirer free cash flow per share over share price is negatively correlated with abnormal return.

Based on our results, we notice a negative but weak and insignificant relationship between FCF and our dependent variable CAR for the short-term studies, while in the long-term, the coefficients are of opposite sign, but still insignificant. Thus, we cannot find support for hypothesis 9. While our results are not significant, the coefficients are in line with what we expect in our formulated hypothesis as well as previously discussed literature (Jensen, 1986). As mentioned in section 3.3.7, this could be due to the free cash flow hypothesis which suggests that cash-heavy firms underperform in acquisitions, possibly due to agency problems that could be negatively affecting the acquirer's abnormal returns.

Hypothesis 10: ROA is positively correlated with abnormal returns.

Our results indicate that the explanatory variable ROA has zero effect on acquirer's abnormal return, CAR, in the short-term regressions, but a negative and weak correlation for all other specifications. This contradicts our formulated hypothesis, and our results cannot confirm the literature due to their insignificance. Thus, we find no support for hypothesis 10. This phenomenon could be due to the market deeming the acquisition as an inefficient use of the acquirer's assets. Since a high ROA suggests efficient profit generation, and hence, a positive impact on abnormal returns, our sample may indicate that the market can view certain acquisitions performed by firms with high $ROAs$ as unnecessary or ineffective. A simpler explanation may be that the success of M&As in the manufacturing industry do not depend on the acquirer's past performance, instead it is more reflective of future performance and the individual characteristics of the target and the deal itself. Thus, the relationship between ROA and the abnormal returns of European acquirers in the manufacturing industry may be dependent on factors such as the respective target firms, the sub-industry, and the overall market conditions when the deal announcement was made.

Hypothesis 11: LnMCAP is negatively correlated with abnormal returns.

Similar to the studies conducted by Laamanen and Keil (2008) and, Rose, Sørheim, and Lerkerød (2017), which all used market capitalization as a measure of size of the acquirer, we find a negative but weak and insignificant correlation between the *LnMCAP* and the dependent variable for the regressions conducted in the short- and long-term windows. However, with the exception of Reg.3, where the relationship is positive. Thus, we find no evidence in support of hypothesis 11. The exact determinants of these results are rather ambiguous, so we deem further analysis arbitrary given the insignificance of the coefficients.

Hypothesis 12: Leverage is negatively correlated with abnormal returns.

Our results show a negligible and insignificant relationship between leverage (total debt to total capital) and abnormal returns. Therefore, no support of hypothesis 12 can be established. It could be argued that since high leverage is common among capital-intensive manufacturing firms, that it doesn't contribute to either positive or negative abnormal returns for the acquirer. On one hand, since a high leverage ratio could limit the acquirer's cash flow, thus reducing agency costs and overinvestment, one may expect a positive impact on abnormal returns. However, it could also deter conservative and risk-averse investors, leading to negative abnormal returns and an illiquid stock. Due to the insignificance and negligibility of our results, the analysis of leverage as an explanatory variable is also rather ambiguous in our particular sample; however, we expect variation depending on the selected sample and its characteristics.

Hypothesis 13: IATA is negatively correlated with abnormal returns.

Intangible assets over total assets are observed to have a positive but insignificant correlation with abnormal returns. This holds true for all regression specifications in the short- and long-term events. These results are not in line with our initial theories. Thus, we cannot find any support for hypothesis 13. The intuition might be that high intangible assets in the manufacturing industry can provide competitive advantages and show long-term growth potential, resulting in positive abnormal returns. This is evidenced by the higher positive coefficients in the long-term regressions compared to the short-term in our results. However, this relationship might not always be straightforward, warranting further analysis and research in the explanatory power of intangible assets as a predictor of abnormal returns. Moreover, given that manufacturing firms are highly reliant on tangible assets as a value driver for growth, sales and production, an extraordinarily high intangible asset to total assets ratio means that the manufacturing firm would be limited in its ability to produce their products in the quantities

that the firm desires. Thus, the firm would accumulate unnecessarily high amounts of intangibles which cannot be used to its full potential in production, and it might also indicate that the firm is growing primarily through acquisitions rather than organically.

Hypothesis 14: R&D/Sales is negatively correlated with abnormal returns.

Our regression results exhibit a negative and significant relationship at the 5% significance level between $RDSales$ and our dependent variable CAR in the short-term, Reg.2, with a coefficient of -0.002, and a negative but insignificant relationship in the long-term, Reg.4, with a coefficient of -0.004. These results are in line with our formulated hypothesis and thus, we find evidence in support of hypothesis 14. The intuition behind these results is that if the acquirer has a high R&D/Sales ratio, this could indicate that the firm is heavily allocating and investing a significant portion of their earnings into innovation or technologies. The high costs associated with these investments can reduce the acquirer's profitability in the short-term and can be seen as risky due to the uncertainty of these investments especially when they do not yield results immediately. In other words, the funds which are allocated to R&D could instead have been invested into other profitable value drivers, hence, this may be viewed upon negatively by investors, thereby explaining the negative correlation with abnormal returns.

7. Conclusion

This thesis aims to investigate if there exists abnormal return in connection with merger announcements in the short-term and compare this with the compounded one-year buy-and-hold abnormal return in the long-term for European manufacturing firms. In addition, we perform four different regressions to examine if we can statistically explain the variations in the abnormal returns, and thus conclude value-creating determinants for transactions. As for the explanatory variables, they were chosen based on previously established theories and literature, and were as follows; does method of payment, domestic vs. cross-border transaction, deal diversification, public vs. non-public target firm and specified merger wave periods have an impact on the success of the deal. In addition, to capture firm specific characteristics that may impact the transaction, a set of accounting measures were introduced and examined in the regressions. In total, 14 hypotheses were tested.

In the final sample, 209 firms were included in the short-term study, while the long-term consisted of 207 firms, both during a period of 20 years, in combination with a set of deal traits to ensure that the transactions would have a noticeable impact on the acquirer's performance. The empirical findings indicate the presence of positive abnormal return in the short-term event study on statistically significant levels. Thus, support for hypothesis 1 is established which is in accordance with previous literature (See Loderer and Martin 1990; Eckbo and Thorburn 2000; Goergen and Renneboog 2004; Andriuskevicius 2019). In the long-term event study, the paper finds that the average buy-and-hold abnormal return over a one-year period is negative 14.93%, on statistically significant levels, hence no support in favour of hypothesis 2 can be established. Furthermore, this result is in line with most of the earlier conducted research (See Gregory 1997; Loughran and Vijh, 1997; Rau and Vermaelen 1998; André et al., 2004; Dutta and Saadi 2011). As for the rest of the hypotheses, they are all tested in the subsequent regressions. However, the regressions illustrate the hitches of trying to explain this anomaly in abnormal returns. Our empirical results suggests that if the target firm is private, it has a positive effect on the acquirer's abnormal return on the 1% significance level. Thus, we find support for hypothesis 6. On the other hand, we provide evidence that pure cash-transactions are negatively correlated with abnormal return on a 5% significance level, contradicting prior research (See Myers and Majluf 1984; Travlos 1987; Martynova and Renneboog 2009). Hence, we find no evidence for hypothesis 3, rather the opposite. In addition, our findings indicate that focused transactions are positively related to abnormal return at 10% significance level, hence support for hypothesis 5 is established, which is in line with Morck, Shleifer, and

Vishny (1990). Lastly, we conclude that the firm specific accounting measure R&D spendings over sales is negatively correlated with the acquirer's return on a 5% significance level. Thus, we find support of our initially constructed hypothesis 14. However, it is important to note that most of the regressions, except Reg.2, have low R square coefficients, meaning that the regressions can only explain small parts of the variations in the dependent variables, this is especially true when one is observing the long-term regressions. This is most likely a consequence of the individual buy-and-hold abnormal returns over the holding period being extremely noisy, thus, the explanatory variables lack the means to try and capture it. Lastly, this is also the most probable reason why only one of the explanatory variables is significant in Reg.3 and Reg.4. Appendix XXI depicts all the firms included in the short-term study.

To summarize, it is interesting to observe the difficulty in attempting to determine the deal characteristics and financial metrics which may be applied to survey the determinants of value-creation in mergers and acquisitions for acquirers in the European manufacturing industry. It might be that there is an abundance of direct and indirect factors that affect the success of the transaction which cannot be measured in specific deal characteristics or metrics. Perhaps the manufacturing firms themselves define the success of a transaction differently in the long-term, or they perceive it as detached from its stock return which we survey. Mergers and acquisitions are a perplexing phenomenon, even though most researchers find evidence that transactions are on average value-destroying in the long-run, a great portion of manufacturing firms still engage in them, and we will most probably see new records set in the future of number of deals completed within a single year. Thus, further research on the topic is needed to establish more concrete and robust results.

There are many approaches that could be employed for future research. For example, modifying the industry under examination, or survey a new geographical location to observe if the standard theories are applicable in economies less developed than the US and European. Modify or introduce new or uncommonly used explanatory variables to enable a better understanding of value-creation in deals or try to find more qualitative aspects which could be interesting to use instead of the norm of quantitative variables. To finalize, all research is affected by limitations, and our study is no different. Despite our best efforts to deter the influence of thin trading, it is not possible to assert with a high degree of confidence that the parameters derived for the market model in both the short-and long-term studies are accurate. Consequently, the expected return may therefore be subjected to imprecision in certain cases which may slightly alter the outcome.

8. Reference List

Agrawal, A., & Jaffe, J. F. (2000). The post-merger performance puzzle. *Advances in mergers and acquisitions*, vol. 1, pp. 7-41. Emerald Group Publishing Limited.

Agrawal, A., Jaffe, J. F., & Mandelker, G. N. (1992). The post-merger performance of acquiring firms: a re-examination of an anomaly. *The Journal of finance*, vol. 47, no. 4, pp. 1605-1621.

Akbulut, M. E. and Matsusaka, J. G. (2010) '50+ Years of Diversification Announcements', *Financial Review*, vol.45, no.2, p. 231-262.

André, P., Kooli, M. and L'Her, J. (2004). The long-run performance of mergers and acquisitions: evidence from the Canadian stock market, *Financial Management*, vol. 33, no. 4, pp. 27-43.

Andriuskevicius, K. (2019). Comparison of Value Creation through M&A in European Union, *Engineering Economics*, vol. 30 no. 2, pp. 187–194.

Aw, M. S. B. and Chatterjee, R. A. (2004) 'The performance of UK firms acquiring large cross-border and domestic takeover targets', *Applied Financial Economics*, vol.14, no.5, pp. 337–349.

Allen, Gibbs, & Houlik, L.C. M&A trends in manufacturing, *AGHLC*, Available Online: https://aghlc.com/resources/articles/2020/manufacturing-manda-200319.aspx [Accessed April 5, 2023].

Barber, B. M., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of financial economics*, vol. 43, no. 3, pp. 341-372.

Barber, B. M., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of financial economics*, vol. 43, no.3, 341-372.

Berkovitch, E. & Narayanan, M. P. (1993). Motives for takeovers: An empirical investigation. *Journal of Financial and Quantitative Analysis*, vol. 28, no. 3, pp. 347–362.

Bouwman, C. H. S., Fuller, K., & Nain, A. S. (2009). Market valuation and acquisition quality: Empirical evidence. *The Review of Financial Studies*, vol.22, pp. 487–517.

Bruner, R. F. (2009). Deals from hell: M&A lessons that rise above the ashes, NJ: John Wiley & Sons.

Campa, M & Hernando, I. (2004). Shareholder Value Creation in European M&As, *European Financial Management*, vol. 10, no. 1, pp. 50.

Campbell, J. Y., Lo, A. W. and MacKinlay, A. C. (1997). The econometrics of financial markets, NJ:Princeton University Press.

Chang, Saeyoung, (1998), Takeovers of privately held targets, methods of payment, and bidder returns, *Journal of Finance,* vol.53, pp. 773-784.

Chatterjee, S. (1986). Types of synergy and economic value: The impact of acquisitions on merging and rival firms. *Strategic management journal*, vol. 7 no. 2, pp. 119–139.

Craninckx K. and Huyghebaert, N. (2010). Can stock markets predict M&A failure? A study of European transactions in the fifth takeover wave, *European Financial Management*, vol. 17, no. 1, pp. 9-45.

Damodaran, Aswath, The Value of Synergy (October 30, 2005). Available at SSRN: https://ssrn.com/abstract=841486 or http://dx.doi.org/10.2139/ssrn.841486.

DePamphilis, D. M. (2009). Mergers, acquisitions, and other restructuring activities: an integrated approach to process, tools, cases, and solutions. 5th ed. Boston: Academic Press, Elsevier Inc.

Draper, P. and Paudyal, K. (2006) 'Acquisitions: Private versus Public', *European Financial Management*, vol.12, no.1, pp. 57–80.

Duchin, R., & Schmidt, B. (2013). Riding the merger wave: Uncertainty, reduced monitoring, and bad acquisitions. *Journal of Financial Economics*, vol.107, pp. 69–88.

Dutta, S. & Saadi, S. (2011). The Short-Term and Long-Term Performance of M&As, *The Art of Capital Restructuring*, pp. 105–123.

Dutta, S. and Jog, V. (2009). The long-term performance of acquiring firms: a re-examination of ananomaly, *Journal of Banking and Finance*, vol. 33, no. 8, pp. 1400-1412.

Eckbo, B. E. and Thorburn, K. S. (2000) 'Gains to Bidder Firms Revisited: Domestic and Foreign Acquisitions in Canada', *Journal of Financial & Quantitative Analysis*, vol.35, no.1, pp. 1– 25.

Fama, E. (1998). Market efficiency, long-term returns, and behavioral finance, *Journal of Finance and Economics*, vol. 49, no. 3, pp. 283-306.

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The adjustment of stock prices to new information. *International economic review*, vol. 10, no. 1, pp. 1-21.

Flanagan, D. J. (1996) 'Announcements of Purely Related and Purely Unrelated Mergers and Shareholder Returns: Reconciling the Relatedness Paradox', *Journal of Management*, vol.22, no.6, p. 823.

Garfinkel, J. A., & Hankins, K. W. (2011). The role of risk management in mergers and merger waves. *Journal of Financial Economics*, vol.101, pp. 515–532.

Gaughan, P. A. (2007). Mergers, Acquisitions, and Corporate Restructuring, 4th edition, NJ: John Wiley & Sons.

Gaughan, P. A. (2015). Mergers, acquisitions, and corporate restructurings. 6th ed. New Jersey: John Wiley and Sons, Inc.

Goergen, M., & Renneboog, L. (2004). Shareholder Wealth Effects of European Domestic and Cross-Border Takeover Bids, *European Financial Management*, vol. 10, no. 1, pp. 9–45.

Gregory, A. (1997). An examination of the long run performance of UK acquiring firms, *Journal of Business Finance & Accounting*, vol. 24, no. 7-8, pp. 971-1002.

Hair, J. F. Jr., Anderson, R. E., Tatham, R. L. & Black, W. C. (1995). Multivariate Data Analysis (3rd ed). New York: Macmillan.

Hayward, M. L. A. (2002). "When do firms learn from their acquisiton experience? Evidence from 1990-1995". *Strategic Management Journal,* vol. 23, pp. 21–39.

Hayward, M. L. A. and Hambrick, D. C. (1997). Explaining the premiums paid for large acquisitions: evidence of CEO hubris, *Administrative Science Quarterly*, vol. 42, no. 1, pp. 103-127.

Ikenberry, D., Lakonishok, J., & Vermaelen, T. (1995). Market underreaction to open market share repurchases. *Journal of financial economics*, vol. 39, no.2-3, pp. 181-208.

Jensen, M. C. & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, vol. 3, no. 4, pp. 305–360.

Jensen, M. C. (1986), 'Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers', American Economic Review, Vol. 76, no.2, pp. 323-329.

Kahl, M., Gorton, G. & Rosen, R. (2009). Eat or be eaten: A theory of mergers and firm size. *Journal of Finance*, vol. 64, no. 3, pp. 1291–1344.

Kengelbach, J. et al. (2012). "An anatomy of serial acquirers, M&A learning, and the role of post-merger integration". *Electronic Journal*, pp. 1–45.

Kiymaz, H., & Baker, H. (2008). Short-Term Performance, Industry Effects, and Motives: Evidence from Large M&As. *Quarterly Journal of Finance and Accounting*, vol. 47, no. 2, pp. 17-44.

Kothari, S. P. and Warner, J. B. (2008). Econometrics of Event Studies, *Handbook of Corporate Finance: Empirical Corporate Finance* edited by Eckbo, B. E.

Kothari, S. P., & Warner, J. B. (2007). Econometrics of event studies. In *Handbook of empirical corporate finance* (pp. 3-36). Elsevier.

Laamanen, T. and T. Keil (2008). "Performance of Serial Acquirers: Toward an Acquisition Program Perspective". *Strategic Management Journal,* vol. 29, pp. 663–672

Li, X., Stork, P. A., & Zou, L. (2013). An empirical note on US stock split announcements, 2000- 2009. *International Journal of Economic Perspectives*.

Loderer, C. and Martin, K. (1990) 'Corporate Acquisitions by Listed Firms: The Experience of a Comprehensive Sample', Financial Management, vol. 19, no. 4, pp. 17–33.

Loughran, T. and Vijh, A.M. (1997). Do long-term shareholders benefit from corporate acquisitions?, *The Journal of Finance*, vol. 52, no. 5, pp. 1765-1790.

Lyon, J. D., Barber, B. M., & Tsai, C.-L. (1999). Improved Methods for Tests of Long-Run Abnormal Stock Returns. *The Journal of Finance*, vol. 54*,* no.1, pp. 165–201.

IMAA (2022), M&A Statistics: Transactions and Activity by Year. M&A Trends. *IMAA*, Available Online: https://imaa-institute.org/mergers-and-acquisitions-statistics/ [Accessed April 7, 2023].

M&A Trends in Manufacturing. (2020). *AGH*, Available Online: https://aghlc.com/resources/articles/2020/manufacturing-manda-200319.aspx [Accessed April 5,2023].

The Hartman Team. (2022). How M&A Transactions Are Impacting the Growth of Manufacturing Companies, *Hartman Executive Advisors*, Available Online: https://hartmanadvisors.com/how-ma-transactions-are-impacting-the-growth-of-manufacturing-companies/ [Accessed April 5, 2023].

MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of economic literature*, vol.35, no.1, pp. 13-39.

Mangold, N, & Lippok, K. (2008) _The effect of cross-border mergers and acquisitions on shareholder wealth: evidence from Germany'. *Journal of International Business & Economics,* vol.8, no.3, pp. 29-54.

Martynova, M. and Renneboog, L. (2009) 'What determines the financing decision in corporate takeovers: Cost of capital, agency problems, or the means of payment?', *Journal of Corporate Finance,* vol. 15, no.3, pp. 290–315.

McWilliams, A & Siegel, D. (1997). Event Studies in Management Research: Theoretical and Empirical Issues, *The Academy of Management Journal*, vol. 40, no. 3, pp. 626-657.

Meckl, R. & Röhrle, F. (2016). Do M&A deals create or destroy value? A meta-analysis. *European Journal of Business and Economics*, vol. 11 no. 2, pp. 9–19.

Mitchell, M.L. and Stafford, E. (2000). Managerial decisions and long-term stock price performance,*The Journal of Business*, vol. 73, no. 3, pp. 287-329.

Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. (2005). Wealth destruction on a massive scale? A study of acquiring firm returns in the recent merger wave. *The Journal of Finance*, vol.60, pp. 757–782.

Morck, R., Shleifer, A., & Vishny, R. W. (1990) 'Do managerial objectives drive bad acquisitions?'. *The Journal of Finance*, vol.45, no.1, pp. 31–48.

Myers, Stewart C., and Nicholas S. Majluf, (1984), Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, pp. 187-221.

Powell, R., & Yawson, A. (2005). Industry aspects of takeovers and divestitures: Evidence from the UK. *Journal of Banking & Finance*, vol.29, pp. 3015–3040.

Rau, P. And Vermaelen, T. (1998). Glamour, value and the post-acquisition performance of acquiring firms, *Journal of Financial Economics*, vol. 49, no. 2, pp. 223-253.

Ringland, K. (2020). M&A In the Manufacturing Sector, *Financier Worldwide*, Available Online: https://www.financierworldwide.com/ma-in-the-manufacturing-sector [Accessed April 5, 2023].

Ringle, Christian M., Wende, Sven, & Becker, Jan-Michael. (2015). SmartPLS 3. Bönningstedt: SmartPLS.

Roll, R. (1986). The hubris hypothesis of corporate takeovers, *The Journal of Business*, vol. 59, no. 2, pp. 197-216.

Rose, C., D. Sørheim, and M. Lerkerød (2017). "In search of value drivers in mergers and acquisitions". *International Journal of Business Science & Applied Management*, vol. 12 no. 1, pp. 1–28.

Ross, S., Westerfield, R. & Jaffe, J. (2013). Corporate Finance. 10th ed. New York: McGraw-Hill.

Sharma, D. S. & Ho, J. (2002). The impact of acquisitions on operating performance: Some Australian evidence. *Journal of Business Finance & Accounting*, vol. 29, no. 12, pp. 155–200.

Shleifer, A. & Vishny, R. W. (1989). Management entrenchment: The case of manager-specific investments. *Journal of Financial Economics*, vol. 25, no. 1, pp. 123–139.

Siegel, A. (2016). Practical Business Statistics. Seattle: Academic Press, pp. 355– 418.

Sorescu, A., Warren, N., & Ertekin, L. (2017). Event study methodology in the marketing literature: An overview. *Journal of the Academy of Marketing Science*, vol. 45 no. 2, pp. 186-207.

Statistics Explained. (2023). *Eurostat*, Available Online: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Businesses_in_the_manufacturing_sector#Country_overview [Accessed April 5, 2023].

Sudarsanam, S., Holl, P. and Salami, A. (1996), 'Shareholder Wealth Gains in Mergers: Effect of Synergy and Ownership Stmcture', Journal of Business finance & Accounting, Vol.23 (5) & (6), pp. 673 -698.

Trautwein, F. (1990). Merger motives and merger prescriptions. *Strategic management journal*, vol. 11, no. 4, pp. 283–295.

Travlos, Nickolaos G., (1987). Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns. *The Journal of Finance*, vol.42, no.4, pp. 943-963.

Tuch, C. and O'Sullivan, N. (2007). The impact of acquisitions on firm performance: A review of the evidence. *International Journal of Management Reviews*, vol. 9 no. 2, pp. 141–170.

Varaiya, N. (1988). The 'Winner's Curse' Hypothesis and Corporate Takeovers, *Managerial and Decision Economics*, Vol. 9, pp. 209-219.

Zaremba, A. & Plotnicki, M. (2016). Mergers and Acquisitions: Evidence on Post-Announcement Performance from CEE Stock Markets, *Journal of Business Economics and Management*, vol. 17, no. 2, pp. 251–266.
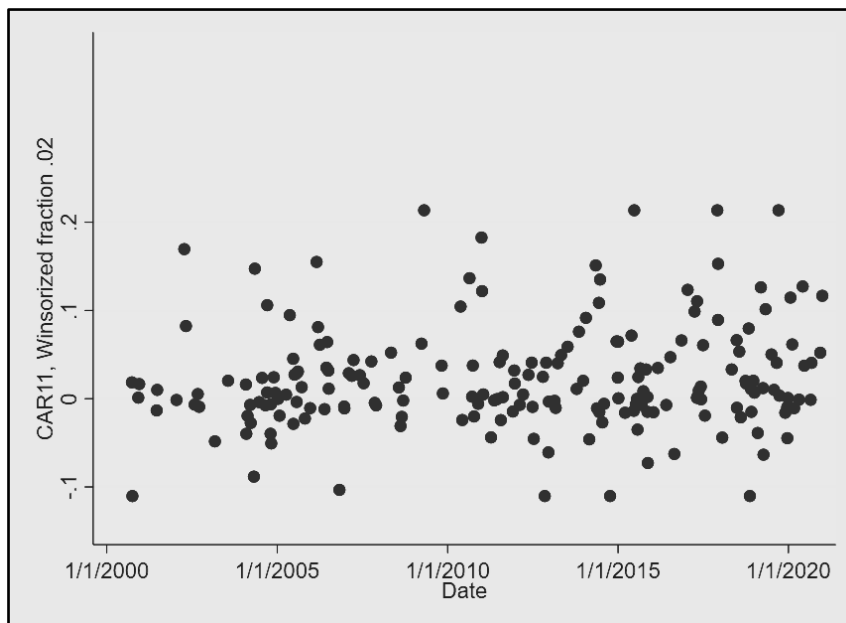
9. Appendix

Appendix I: Mergers & Acquisitions in Europe by number and value of transactions.
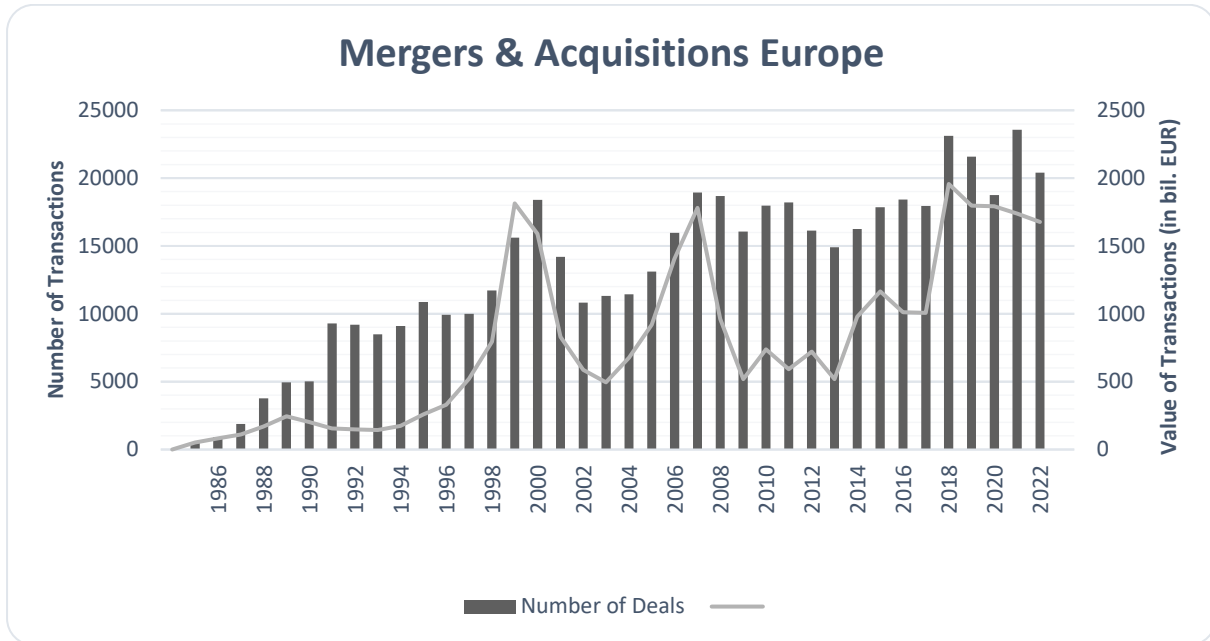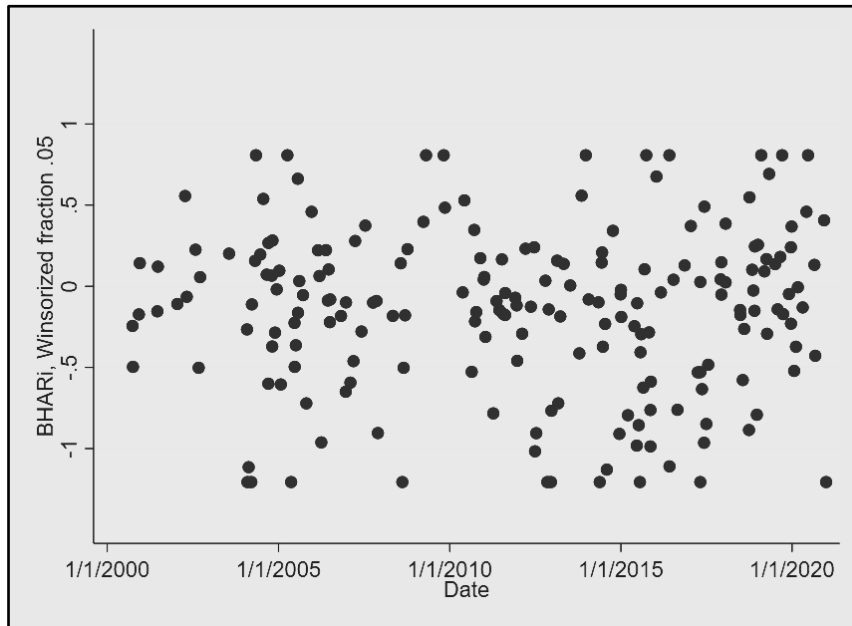

Source: IMAA (2022).

Appendix II: Individual $CAR_{i,-1,+1}$ plotted against their respective announcement date over the entire sample period.

Source: Own calculations from Eikon DataStream and STATA

Appendix III: Individual $BHAR_{i,1\,year}$ plotted against their respective announcement date over the entire sample period.

Source: Own calculations from Eikon DataStream and STATA

Appendix IV: VIF test for the short-term regressions, Reg.1 and Reg.2.

Short-Term

	Reg.1		Reg.2	
	VIF_1	$1/VIF_1$	VIF_2	$1/VIF_2$
FCF	1.44	0.696600	1.48	0.677811
IATA	1.21	0.826020	1.41	0.707199
Focused	1.08	0.926353	1.12	0.895735
Private	1.29	0.773215	1.47	0.678518
Cash	1.16	0.864963	1.15	0.869124
CBD	1.34	0.744450	1.52	0.658965
MWAV	1.05	0.949274	1.07	0.933110
ROA	1.50	0.665379	1.66	0.602941
DVTA	1.20	0.830675	1.33	0.754432
LEV	1.11	0.897290	1.21	0.829454
LnMCAP	1.61	0.622537	1.89	0.530142
RDSales			1.36	0.737506
Mean VIF	1.27		1.39	

Source: Eikon Datastream, calculated using STATA

Appendix V: VIF test for the long-term regressions, Reg.3 and Reg.4.

	Long-Term			
	Reg.3		Reg.4	
	VIF_1	$1/VIF_1$	VIF_2	$1/VIF_2$
FCF	1.44	0.695888	1.48	0.673741
IATA	1.23	0.810930	1.46	0.686756
Focused	1.09	0.917613	1.14	0.876374
Private	1.29	0.773570	1.48	0.677227
Cash	1.16	0.865151	1.15	0.866843
CBD	1.34	0.746014	1.53	0.653110
MWAV	1.05	0.949702	1.07	0.937974
ROA	1.53	0.652943	1.69	0.592699
DVTA	1.20	0.830817	1.32	0.759583
LEV	1.12	0.892742	1.21	0.824106
LnMCAP	1.63	0.615268	1.94	0.515971
RDSales			1.34	0.744082
Mean VIF	1.28		1.40	

Source: Eikon Datastream, calculated using STATA

Appendix VI: Correlation matrix for short-term regression, Reg.1.

Variable	Private	Cash	CBD	Focused	MWAV	LnMCAP	IATA	DVTA	LEV	ROA	FCF
Private	1.0000										
Cash	0.0736	1.0000									
CBD	-0.2231	0.2400	1.0000								
Focused	-0.0291	-0.0136	0.1678	1.0000							
MWAV	0.1095	-0.0194	-0.0569	0.0641	1.0000						
LnMCAP	-0.3399	0.1322	0.3822	0.0383	-0.0044	1.0000					
IATA	-0.0226	0.0472	0.1146	0.0529	0.0400	0.2407	1.0000				
DVTA	-0.2177	-0.1931	0.0144	0.0887	0.0358	-0.1498	0.0090	1.0000			
LEV	-0.0708	0.0282	0.1806	-0.0129	-0.1223	0.0554	-0.0206	-0.1495	1.0000		
ROA	-0.1027	0.1833	0.1717	0.1650	0.0840	0.2626	-0.1943	-0.0182	-0.0299	1.0000	
FCF	-0.1217	0.1241	0.1454	0.0473	0.1175	0.3464	0.1157	-0.0342	-0.1464	0.4475	1.0000

Source: Eikon Datastream, calculated using STATA

Appendix VII: Correlation matrix for short-term regression, Reg.2.

Variable	Private	Cash	CBD	Focused	MWAV	LnMCAP	IATA	DVTA	LEV	ROA	FCF	RDSales
Private	1.0000											
Cash	0.0225	1.0000										
CBD	-0.3133	0.1911	1.0000									
Focused	-0.0628	-0.0577	0.1508	1.0000								
MWAV	0.1698	0.0621	-0.0634	0.0219	1.0000							
LnMCAP	-0.3810	0.1382	0.4520	-0.0283	-0.0280	1.0000						
IATA	-0.0781	0.0533	0.1396	0.0218	0.0343	0.2206	1.0000					
DVTA	-0.2546	-0.2160	-0.0736	0.1306	0.0321	-0.1670	0.0447	1.0000				
LEV	-0.1818	-0.0075	0.2748	0.1014	-0.0842	0.1455	-0.0151	-0.1828	1.0000			
ROA	-0.0988	0.1674	0.2066	0.1531	0.0323	0.2435	-0.2559	-0.0580	-0.0254	1.0000		
FCF	-0.0628	0.1884	0.1081	-0.0279	0.0952	0.3417	0.2698	-0.0401	-0.0873	0.3177	1.0000	
RDSales	-0.0159	-0.0131	-0.1619	-0.1694	0.0746	0.0770	-0.0881	0.0158	-0.0790	-0.3201	-0.2287	1.0000

Source: Eikon Datastream, calculated using STATA

Appendix VIII: Correlation matrix for long-term regression, Reg.3.

Variable	Private	Cash	CBD	Focused	MWAV	LnMCAP	IATA	DVTA	LEV	ROA	FCF
Private	1.0000										
Cash	0.0717	1.0000									
CBD	-0.2273	0.2373	1.0000								
Focused	-0.0495	-0.0083	0.1777	1.0000							
MWAV	0.0894	-0.0165	-0.0525	0.0579	1.0000						
LnMCAP	-0.3420	0.1341	0.3774	0.0556	0.0141	1.0000					
IATA	-0.0269	0.0459	0.0994	0.0699	0.0537	0.2493	1.0000				
DVTA	-0.2182	-0.1908	0.0189	0.0860	0.0351	-0.1489	0.0125	1.0000			
LEV	-0.0749	0.0224	0.1831	-0.0199	-0.1340	0.0471	-0.0231	-0.1451	1.0000		
ROA	-0.0943	0.1855	0.1621	0.1750	0.0946	0.2654	-0.2018	-0.0205	-0.0304	1.0000	
FCF	-0.1187	0.1235	0.1400	0.0515	0.1207	0.3451	0.1138	-0.0337	-0.1498	0.4498	1.0000

Source: Eikon Datastream, calculated using STATA

Appendix IX: Correlation matrix for long-term regression, Reg.4.

Variable	Private	Cash	CBD	Focused	MWAV	LnMCAP	IATA	DVTA	LEV	ROA	FCF	RDSales
Private	1.0000											
Cash	0.0185	1.0000										
CBD	-0.3086	0.1992	1.0000									
Focused	-0.0968	-0.0492	0.1781	1.0000								
MWAV	0.1376	0.0679	-0.0364	0.0090	1.0000							
LnMCAP	-0.3906	0.1383	0.4618	-0.0075	-0.0084	1.0000						
IATA	-0.0725	0.0631	0.1286	0.0620	0.0782	0.2381	1.0000					
DVTA	-0.2544	-0.2121	-0.0791	0.1260	0.0303	-0.1637	0.0390	1.0000				
LEV	-0.1869	-0.0135	0.2855	0.0958	-0.0960	0.1390	-0.0060	-0.1784	1.0000			
ROA	-0.0880	0.1668	0.1986	0.1658	0.0410	0.2382	-0.2725	-0.0576	-0.0217	1.0000		
FCF	-0.0602	0.1845	0.1095	-0.0236	0.0962	0.3350	0.2712	-0.0359	-0.0907	0.3180	1.0000	
RDSales	-0.0497	-0.0104	-0.1323	-0.1738	0.0743	0.0961	-0.0413	0.0173	-0.0935	-0.3141	-0.2316	1.0000

Source: Eikon Datastream, calculated using STATA

Appendix X: Descriptive statistics for short-term regression, Reg.1.

Variable	Observations	Mean	Std. dev.	Min	Max
CAR_1	197	.0230663	.0594661	-.1103595	.2135201
Private	197	.7258883	.447202	0	1
Cash	197	.6852792	.4655878	0	1
CBD	197	.4670051	.5001813	0	1
Focused	197	.7005076	.4592027	0	1
MWAV	197	.4213198	.4950286	0	1
LnMCAP	197	13.59587	2.410126	8.084254	20.20031
IATA	197	.2841849	.1900841	9.62e-06	.7719362
DVTA	197	.2098	.3316888	.0026521	1.362994
LEV	197	33.74751	17.66346	4.31	62.78
ROA	197	3.529949	11.32384	-46.06	28.79
FCF	197	.0054583	.0759531	-.2887701	.1576277

Source: Eikon Datastream, calculated using STATA

Appendix XI: Descriptive statistics for short-term regression, Reg.2.

| Variable	Observations	Mean	Std. dev.	Min	Max
CAR_2	110	.0211099	.055769	-.1033413	.1695097
Private	110	.6727273	.4713652	0	1
Cash	110	.7090909	.4562603	0	1
CBD	110	.5545455	.4992906	0	1
Focused	110	.7090909	.4562603	0	1
MWAV	110	.4545455	.5002085	0	1
LnMCAP	110	14.18251	2.592178	9.265397	20.20031
IATA	110	.3117775	.1805869	.0067537	.7152387
DVTA	110	.2419438	.3798991	.0026521	1.45504
LEV	110	32.68973	17.37327	2.95	57.16
ROA	110	5.283545	9.365753	-37.46	21.83
FCF	110	.0094787	.0613793	-.246063	.0906153
RDSales	110	5.214727	6.975554	0	32.37

Source: Eikon Datastream, calculated using STATA

Appendix XII: Descriptive statistics for long-term regression, Reg.3.

| Variable	Observations	Mean	Std. dev.	Min	Max
$BHAR_1$	196	-.1460591	.5010221	-1.206236	.8075912
Private	196	.7244898	.4479151	0	1
Cash	196	.6836735	.4662329	0	1
CBD	196	.4642857	.5	0	1
Focused	196	.7040816	.4576234	0	1
MWAV	196	.4234694	.4953737	0	1
LnMCAP	196	13.6061	2.437574	8.084254	20.20031
IATA	196	.2836521	.1881233	9.62e-06	.7719362
DVTA	196	.2111536	.3320917	.0026521	1.362994
LEV	196	33.59628	17.67165	4.31	62.78
ROA	196	3.569745	11.37682	-46.06	28.79
FCF	196	.0053811	.0761985	-.2887701	.1576277

Source: Eikon Datastream, calculated using STATA

Appendix XIII: Descriptive statistics for long-term regression, Reg.4.

| Variable	Observations	Mean	Std. dev.	Min	Max
$BHAR_2$	109	-.0768284	.4510042	-.9043745	.8075912
Private	109	.6697248	.4724845	0	1
Cash	109	.706422	.4575043	0	1
CBD	109	.559633	.4987242	0	1
Focused	109	.7155963	.4532137	0	1
MWAV	109	.4587156	.5005943	0	1
LnMCAP	109	14.18507	2.620077	9.265397	20.20031
IATA	109	.3143767	.1803794	.0067537	.7152387
DVTA	109	.2448367	.3806235	.0031315	1.45504
LEV	109	32.52972	17.39326	2.95	57.16
ROA	109	5.264587	9.386802	-37.46	21.83
FCF	109	.0090441	.0615665	-.246063	.0906153
RDSales	109	5.24422	7.02387	0	32.37

Source: Eikon Datastream, calculated using STATA

Appendix XIV: Dependent variable $CAR_{i,-1+1}$, before and after applying a winsorizing fraction of 0.02, n is the number of observations.
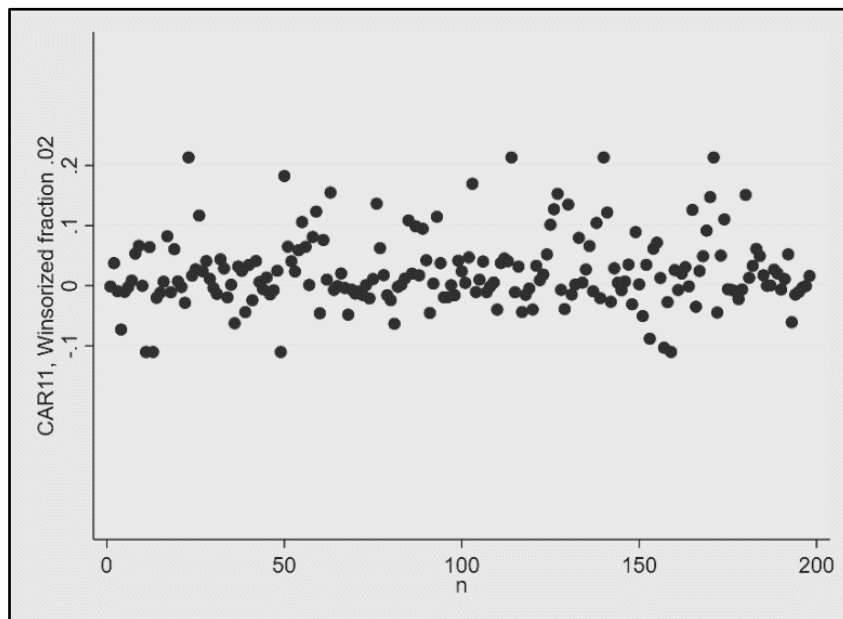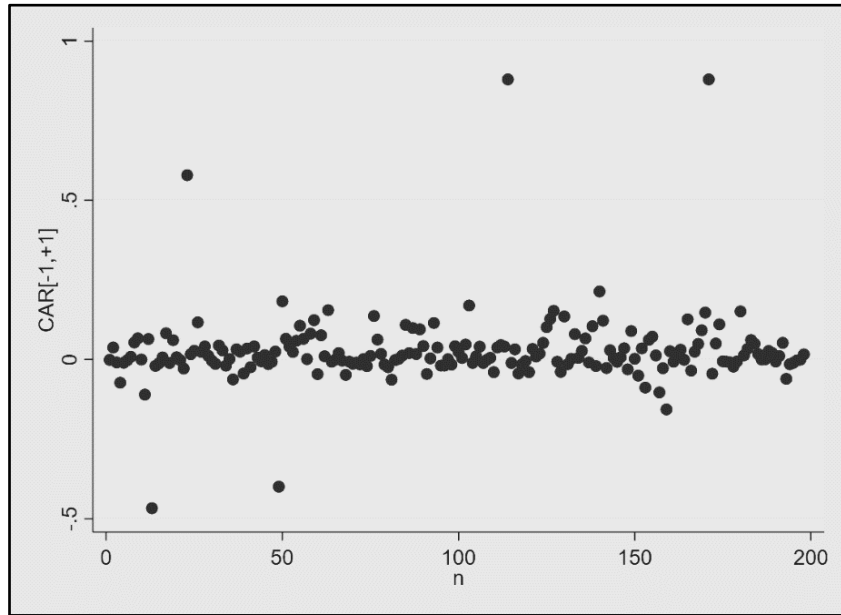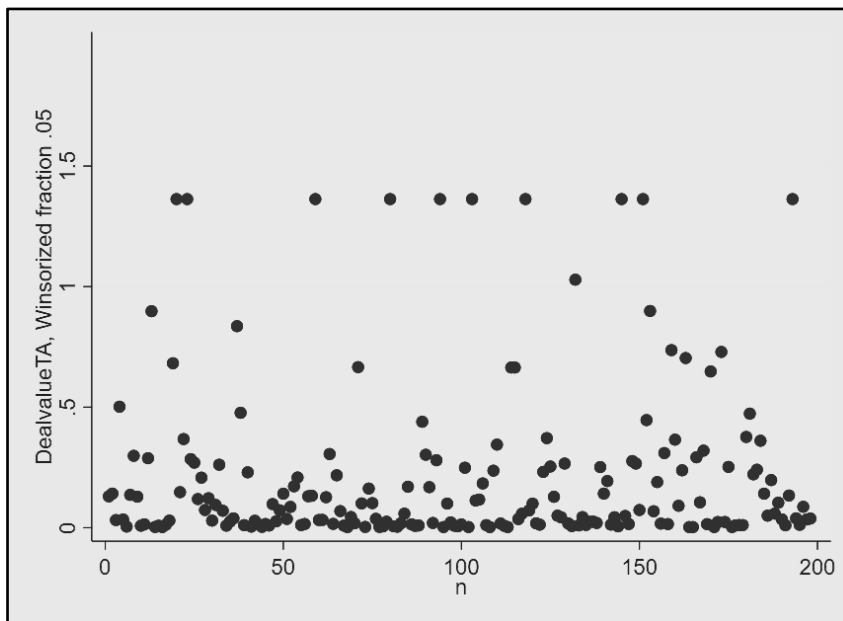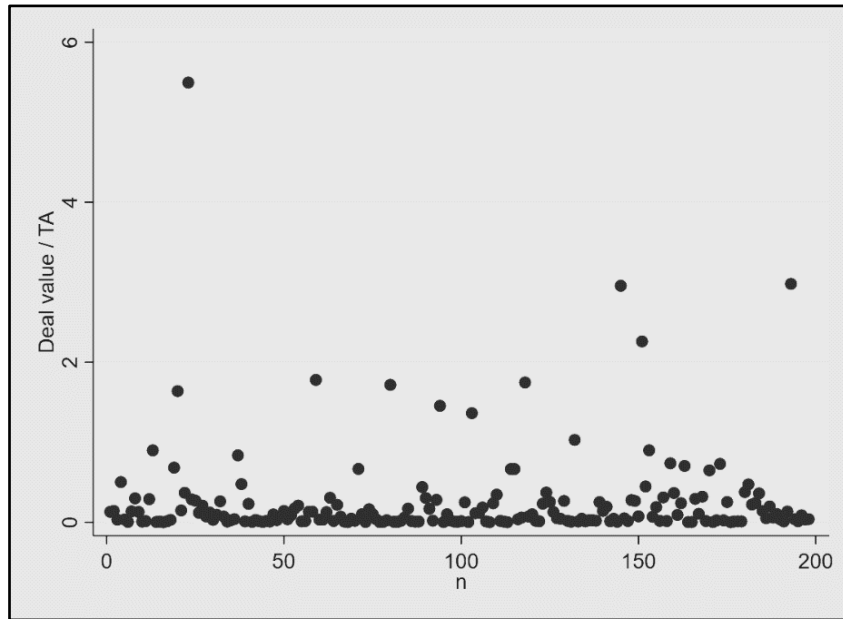

Source: Eikon Datastream, calculated using STATA

Appendix XV: Dependent variable $BHAR_{i,1\ year}$, before and after applying a winsorizing fraction of 0.05, n is the number of observations.
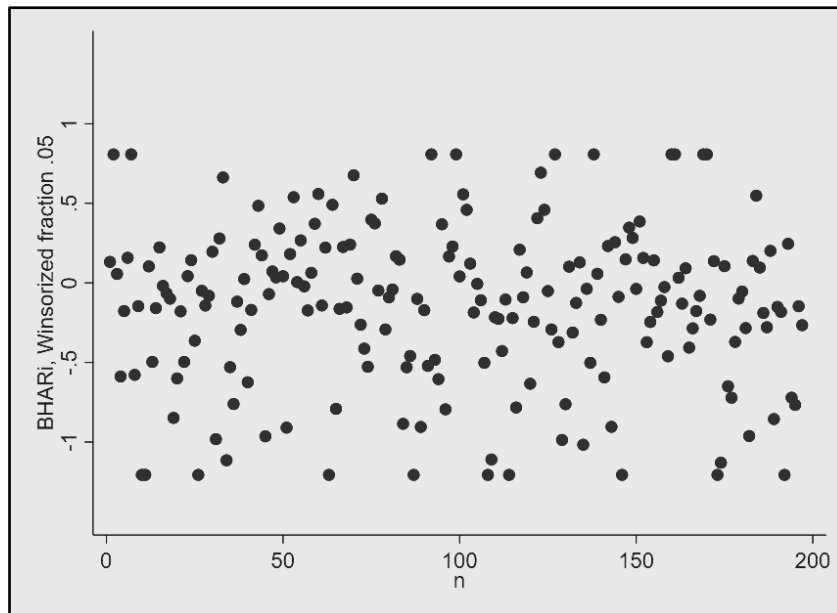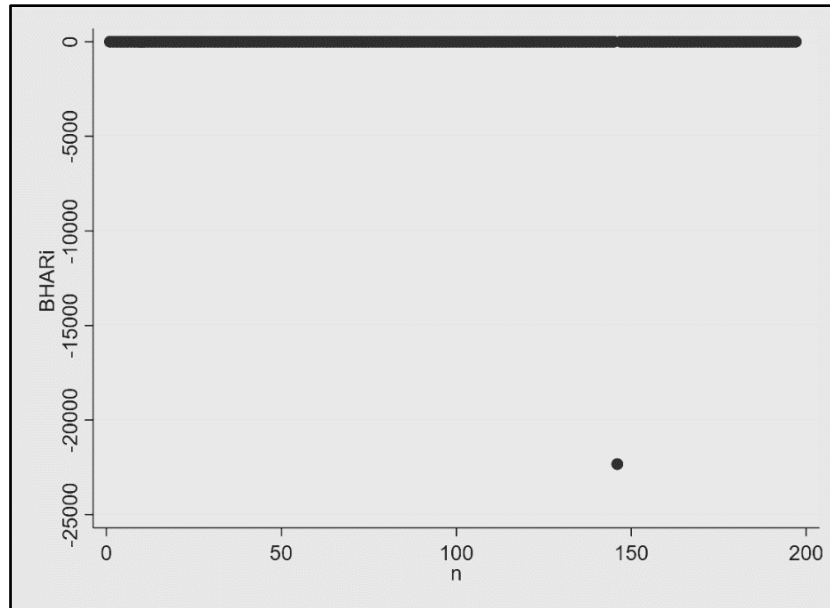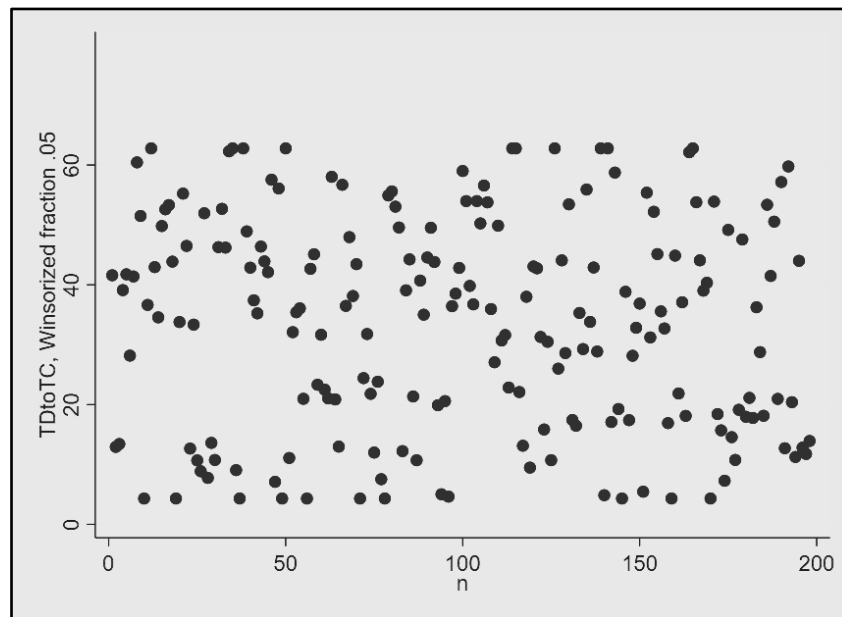

Source: Eikon Datastream, calculated using STATA

Appendix XVI: Independent variable *DVTA*, deal value over total assets, before and after applying a winsorizing fraction of 0.05, n is the number of observations.

Source: Eikon Datastream, calculated using STATA

Appendix XVII: Independent variable *LEV*, expressed as total debt to total capital, before and after applying a winsorizing fraction of 0.05, n is the number of observations.

Source: Eikon Datastream, calculated using STATA

Appendix XVIII: Independent variable ROA, before and after applying a winsorizing fraction of 0.01, n is the number of observations.
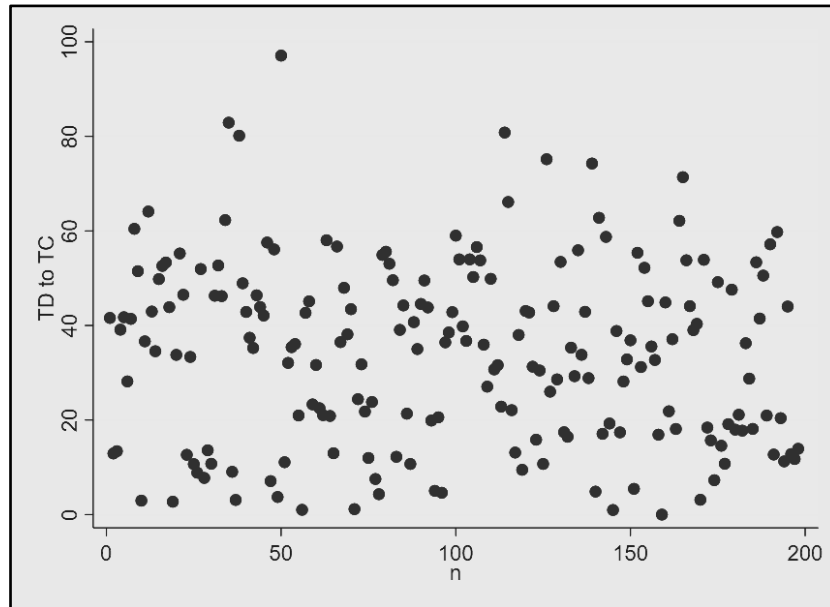

Source: Eikon Datastream, calculated using STATA

Appendix XIX: Independent variable FCF, acquirer free cash flow per share divided by share price, before and after applying a winsorizing fraction of 0.02, n is the number of observations.
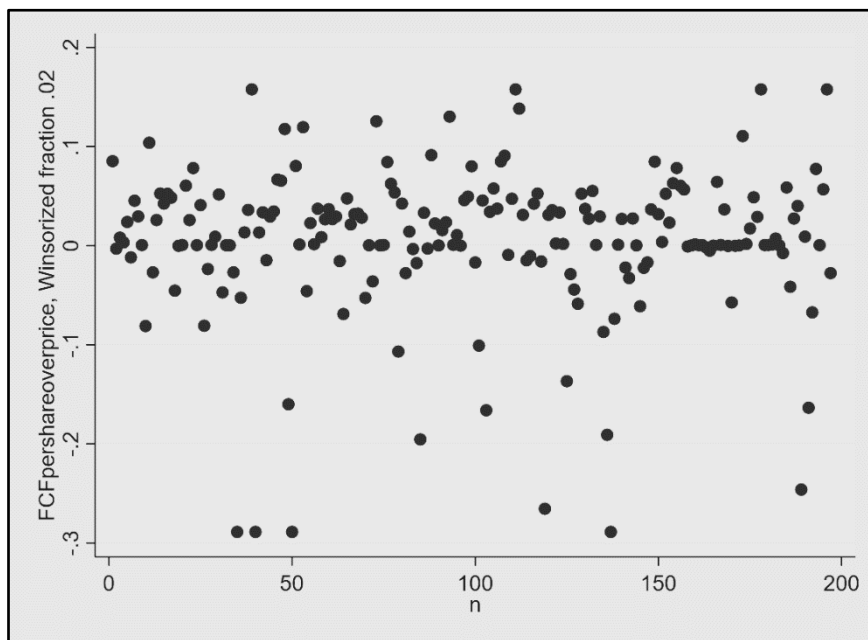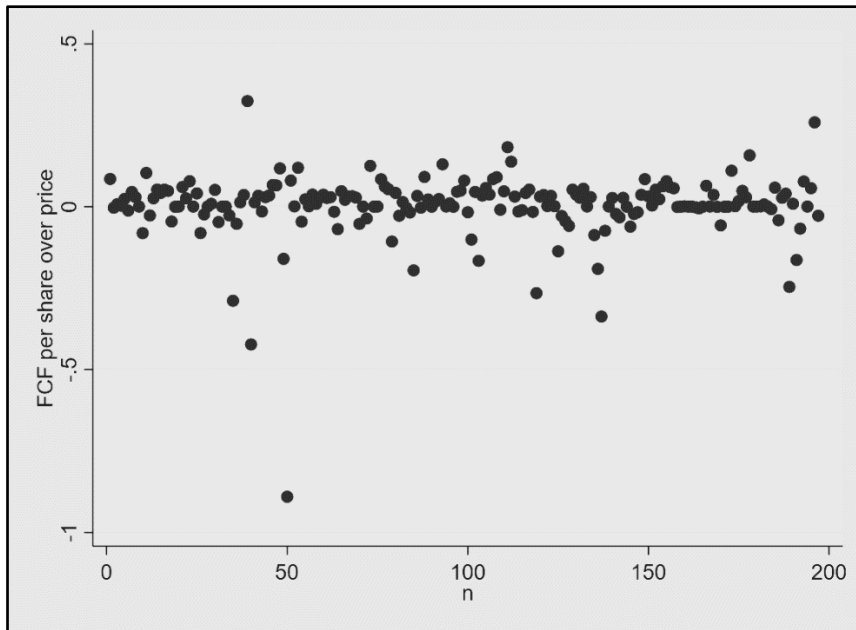
Source: Eikon Datastream, calculated using STATA

Appendix XX: Independent variable $RDSales$, R&D spendings over sales, before and after applying a winsorizing fraction of 0.03, n is the number of observations.
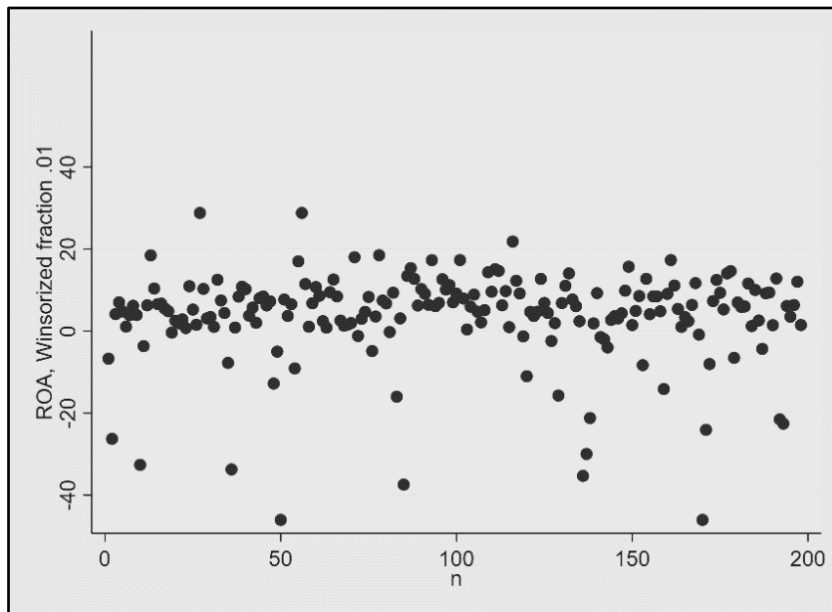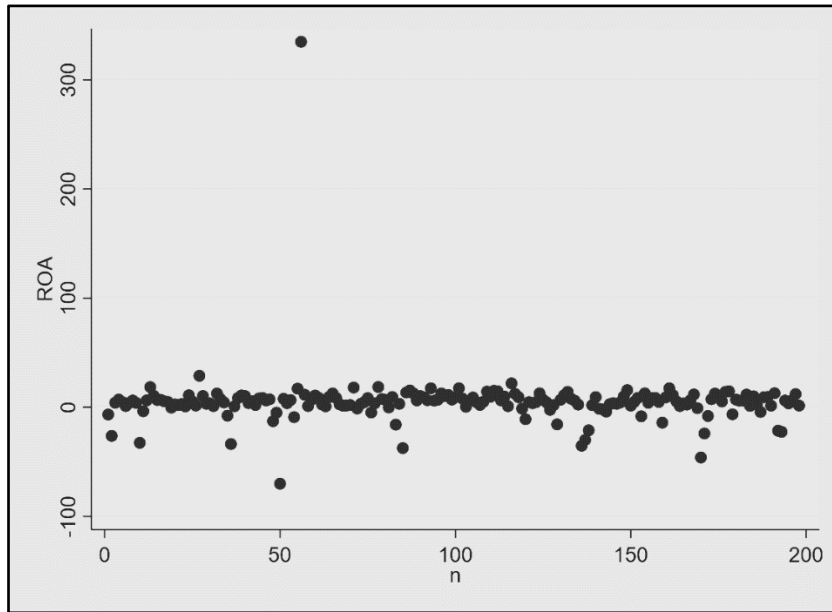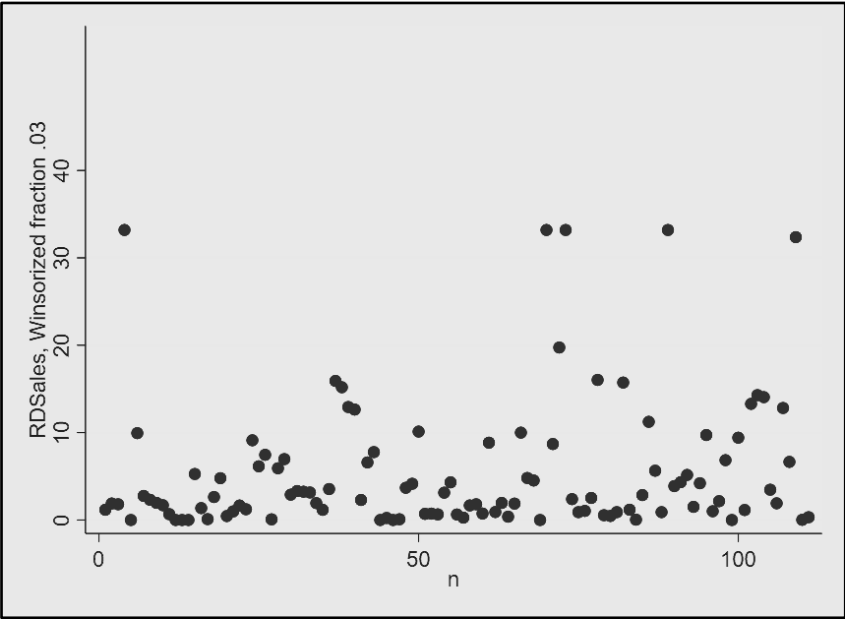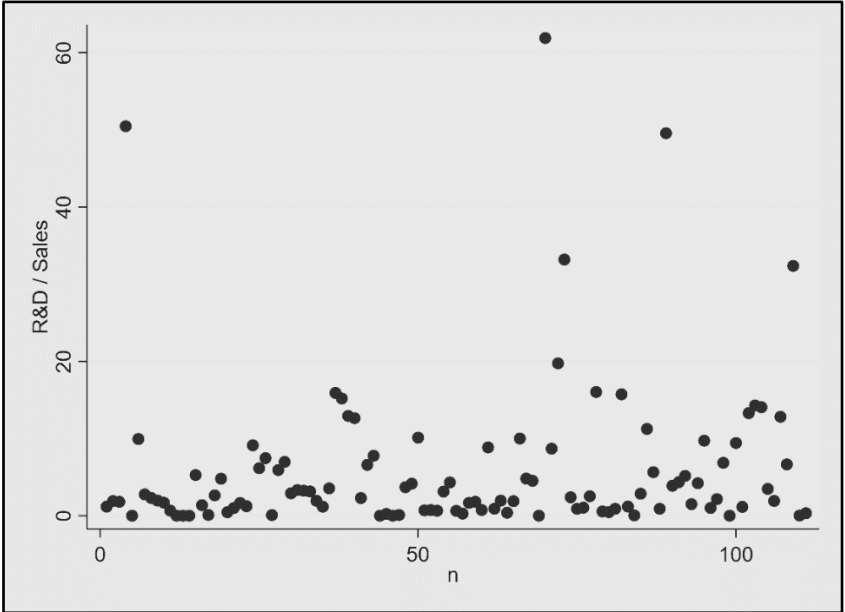

Source: Eikon Datastream, calculated using STATA

Appendix XXI: Sample of acquirer and respective target firms, accompanied by their respective announcement day.

Acquirer name	Target name	Announced date
11880 SOLUTIONS AG	FAIRRANK GMBH	2020-08-26
ACAL PLC	BFI OPTILAS SAS	2009-10-29
AGORA SA	ART MARKETING SYNDICATE SA	2002-09-18
AIR LIQUIDE SA	AIRGAS INC.	2015-11-17
AKVA GROUP ASA	EGERSUND NET AS	2018-06-28
AKVA GROUP ASA	PLASTSVEIS AS	2013-02-20
ALMA MEDIA OYJ	TALENTUM OYJ	2015-09-29
AMPLIFON SPA	GABINETE DE AUDIOPROTESIS ELECTROMEDICINA Y SERVICIOS SA	2018-07-24
ANDRITZ AG	XERIUM TECHNOLOGIES INC.	2018-06-25
ANOTO GROUP AB	XMS PENVISION AB	2015-07-23
APATOR SA	METRIX SA	2004-12-22
APATOR SA	FABRYKA APARATURY POMIAROWEJ PAFAL SA	2004-03-11
ARCTIC PAPER SA	ROTTNEROS AB	2012-11-07
ARNOLDO MONDADORI EDITORE SPA	EMAP FRANCE SAS	2006-06-20
ASML HOLDING NV	SILICON VALLEY GROUP INC.	2000-10-02
ASSA ABLOY AB	ACTIVIDENTITY CORPORATION	2010-10-11
ASSA ABLOY AB	FARGO ELECTRONICS INC.	2006-05-23
ASSA ABLOY AB	BEST METALINE	2004-12-13
ASSA ABLOY AB	BESAM AB	2002-04-29
ATRIA YHTYMÄ OYJ	A-TUOTTAJAT OY	2006-12-22
AVINGTRANS PLC	HAYWARD TYLER GROUP PLC	2017-06-30
AVINGTRANS PLC	STAINLESS METALCRAFT (CHATTERIS) LTD	2004-09-15
AZKOYEN SA	PRIMION TECHNOLOGY AG	2008-09-12
AZKOYEN SA	COGES SPA	2005-06-23
BIOORGANIC RESEARCH AND SERVICES SA	ANTIBIOTICOS DE LEON SL	2017-11-30
BODYCOTE INTERNATIONAL PLC	LINDBERG CORPORATION	2000-12-14
BOIRON SA	LABORATOIRES DOLISOS SA	2005-07-05
BORUTA-ZACHEM SA	INVENTIONBIO SP ZOO	2020-12-29
BUMECH SA	ZWG SA	2014-12-29
C&C GROUP PLC	M&J GLEESON (INVESTMENTS) LTD	2012-11-22
CALTAGIRONE EDITORE SPA	SOCIETA EDITRICE PADANA SPA	2006-07-07
CALTAGIRONE EDITORE SPA	SOCIETA EDITORIALE ADRIATICA SPA	2004-06-21
CENTRALE DEL LATTE DI TORINO & C SPA	CENTRALE DEL LATTE DI FIRENZE, PISTOIA E LIVORNO SPA	2015-06-19
CHEMRING GROUP PLC	SIMMEL DIFESA SPA	2007-03-30
CHEMRING GROUP PLC	COMET GMBH, PYROTECHNIK-APPARATEBAU	2005-07-26
CIE AUTOMOTIVE SA	MAIER DO BRASIL LTDA	2004-02-18
CLASS EDITORI SPA	CLASSPUBBLICITÀ SPA	2017-04-27
CLAVISTER HOLDING AB	PHENIXID AB	2016-08-26
CLOETTA AB	LEAF HOLLAND BV	2011-12-16
COCA-COLA EUROPEAN PARTNERS PLC	COCA-COLA ERFRISCHUNGSGETRANKE AG	2015-08-06

COFINA SGPS SA	F RAMADA - AÇOS E INDÚSTRIAS SA	2001-10-17
COGNOR HOLDING SA	ODLEWNIA METALI SZOPIENICE SP ZOO	2018-01-22
COIL SA/NV	UNITED ANODISERS SRL	2015-08-28
COMPAGNIE DE SAINT-GOBAIN SA	BROSSETTE SA	2011-07-25
CORTICEIRA AMORIM SGPS SA	TREFINOS SL	2012-06-20
CSM NV	UNILEVER'S EUROPEAN BAKERY SUPPLIES BUSINESS	2000-07-11
CTT SYSTEMS AB	CATRON ELEKTRONIK AB	2009-11-11
DANONE SA	YOCREAM INTERNATIONAL INC.	2010-11-24
DATALOGIC SPA	SOREDI TOUCH SYSTEMS GMBH	2017-06-06
DATALOGIC SPA	PPT VISION INC.	2011-12-01
DATALOGIC SPA	LASERVALL SPA	2004-08-28
DEOLEO SA	HOJIBLANCA SOCIEDAD COOPERATIVA ANDALUZA	2012-10-18
DIAGENIC ASA	NEL HYDROGEN AS	2014-10-08
DIGITAL VISION AB	IMAGE SYSTEMS AB	2010-12-30
DORO AB	CARETECH AB	2014-12-16
EBRO FOODS SA	TILDA LTD	2019-08-28
EBRO PULEVA SA	RIVIANA FOODS INC.	2004-07-23
EFORE OYJ	ROAL ELECTRONICS SPA	2013-07-10
ELEKTROBIT GROUP OYJ	PJ MICROWAVE OY	2004-09-16
ELEKTROBIT TECHNOLOGIES OY	BIRDSTEP TECHNOLOGY OY	2015-01-02
EMS-CHEMIE HOLDING AG	AXANTIS HOLDING AG	2000-12-04
ERCROS SA	DERIVADOS FORESTALES SA	2006-03-14
ESSILOR INTERNATIONAL SA	LUXOTTICA GROUP SPA	2017-01-16
ESSILOR INTERNATIONAL SA	COASTAL CONTACTS INC.	2014-02-27
ESSILOR INTERNATIONAL SA	COSTA INC.	2013-11-08
ESSILORLUXOTTICA SA	GRANDVISION NV	2019-07-31
EST MEDIA VAGYONKEZELO NYRT	DELTA SYSTEMS KFT	2019-07-30
EXEL OYJ	PACIFIC COMPOSITES PTY LTD	2006-02-27
FABRYKI MEBLI FORTE SA	FURNEL SA	2004-03-17
FAES FARMA SA	LABORATORIOS DIAFARM SA	2017-06-09
FAGERHULT AB	IGUZZINI ILLUMINAZIONE SPA	2018-12-21
FINMECCANICA SPA	DATAMAT SPA	2005-07-28
FINMECCANICA SPA	OTE MARCONI SPA	2003-03-05
FINMECCANICA SPA	MARCONI MOBILE SPA	2002-07-31
FINMECCANICA SPA	TELESPAZIO SPA	2001-06-19
FOCUSRITE PLC	MARTIN AUDIO LTD	2019-12-19
GLOBAL COSMED SA	GLOBAL COSMED GROUP SA	2016-01-15
GOBARTO SA	JAMA SP ZOO	2017-04-27
GOOCH & HOUSEGO PLC	INTEGRATED TECHNOLOGIES LTD	2018-08-08
GOOCH & HOUSEGO PLC	SPANOPTIC LTD	2013-10-15
GOODTECH ASA	E&I INTRESSENTER AB	2010-08-24
GOODTECH ASA	LECAB MATERIALHANTERING AB	2009-03-27
GOODTECH ASA	MTH AUTOMATION AB	2007-07-16
GRANGES AB	IMPEXMETAL SA	2019-11-28

GRIFOLS SA	TALECRIS BIOTHERAPEUTICS HOLDINGS CORPORATION	2010-06-07
GRUPA KAPITALOWA IMMOBILE SA	ATREM SA	2019-04-09
GRUPPA CHERKIZOVO OAO	MOSSELPROM ZAO	2011-05-16
GUIDELINE TECHNOLOGY AB	ABEM INSTRUMENT AB	2011-08-16
HAMATON AUTOMOTIVE TECHNOLOGY CO., LTD	WESTFALIA SHANGHAI TRADING CO., LTD	2019-04-03
HELIOCENTRIS ENERGY SOLUTIONS AG	FUTUREE FUEL CELL SOLUTIONS GMBH	2014-06-10
HEXPOL AB	MESGO SPA	2018-09-28
HEXPOL AB	TRELLEBORG MATERIAL & MIXING LESINA SRO	2017-03-31
HEXPOL AB	HORST MÜLLER KUNSTSTOFFE GMBH & CO. KG	2011-12-22
HF COMPANY SA	LABORATOIRE EUROPEEN ADSL	2005-05-16
HIKMA PHARMACEUTICALS PLC	ARAB PHARMACEUTICAL MANUFACTURING COMPANY LTD, THE	2007-10-07
HMS HYDRAULIC MACHINES & SYSTEMS GROUP PLC	KAZANSKII ZAVOD KOMPRESSORNOGO MASHINOSTROENIYA OAO	2012-07-12
HUBSTYLE SA	3R STUDIO MOBILE SP ZOO	2020-09-28
HUHTAMAKI OYJ	EVEREST FLEXIBLES (PTY) LTD	2019-09-27
INCAP OYJ	AWS ELECTRONICS GROUP LTD	2020-01-23
INDITHERM PLC	INSPIRATION HEALTHCARE LTD	2015-06-23
INSPIRATION HEALTHCARE GROUP PLC	SLE LTD	2020-06-19
INTEK GROUP SPA	ERGYCAPITAL SPA	2017-07-20
INTERNATIONAL GREETINGS PLC	NAPIER INDUSTRIES LTD	2005-01-26
INTERPUMP GROUP SPA	TRANSTECNO SRL	2019-12-27
INTERPUMP GROUP SPA	INOXIHP SRL	2015-03-17
INTERPUMP GROUP SPA	GALTECH SRL	2011-07-12
INTERPUMP GROUP SPA	COVER SRL	2008-10-08
INTERPUMP GROUP SPA	HAMMELMANN MASCHINENFABRIK GMBH	2005-04-06
INWIDO AB	CWG CHOICES LTD	2016-07-15
JOT AUTOMATION GROUP OYJ	ELEKTROBIT OYJ	2002-04-11
KCI KONECRANES OYJ	R.STAHL FÖRDERTECHNIK GMBH	2005-12-20
KERRY GROUP PLC	GOLDEN VALE PLC	2001-06-25
KESKISUOMALAINEN OYJ	SUOMEN LEHTIYHTYMA OY	2013-03-26
KION GROUP AG	DIGITAL APPLICATIONS INTERNATIONAL LTD	2020-03-02
KONGSBERG GRUPPEN ASA	SEAFLEX AS	2002-01-18
KONINKLIJKE DSM NV	ROCHE HOLDING AG'S VITAMIN BUSINESS	2002-09-03
L3C SA	CODICO SA	2004-02-05
LEROY SEAFOOD GROUP ASA	SJØTROLL HAVBRUK AS	2010-09-28
LEROY SEAFOOD GROUP ASA	AURORA SALMON AS	2005-06-21
LIVANOVA PLC	CYBERONICS INC.	2015-02-26
MAREL HF	TREIF MASCHINENBAU GMBH	2020-09-04
MASSOLIT MEDIA AB	STORYTEL AG	2015-06-24

MEDEA SA	ARTEA SA	2014-05-20
MEDISTIM ASA	KIR-OP AS	2006-07-03
MEDIVIR AB	BIOPHAUSIA AB	2011-04-11
MEDTRONIC HOLDINGS LTD	MEDTRONIC INC.	2014-06-15
MEMSCAP SA	LABORATOIRES LA LICORNE SA, LES	2007-11-12
MEMSCAP SA	OPTOGONE SA	2004-10-21
MIDSONA AB	DAVERT GMBH	2018-05-03
MIDSONA AB	BRINGWELL AB	2017-05-15
MOLINS PLC	FILTRONA INSTRUMENTS AND AUTOMATION BUSINESS	2000-09-27
MONCLER SPA	SPORTSWEAR COMPANY SPA	2020-12-07
MPAC GROUP PLC	LAMBERT AUTOMATION LTD	2019-05-01
NEO INDUSTRIAL OYJ	REKA KUMI OY	2020-06-02
NEXAM CHEMICAL HOLDING AB	PLASTICOLOR SWEDEN AB	2017-12-08
NEXANS SA	AMERCABLE HOLDINGS INC.	2012-02-13
NFON AG	DEUTSCHE TELEFON STANDARD AG	2019-02-06
NIBE INDUSTRIER AB	WATERFURNACE RENEWABLE ENERGY INC.	2014-06-23
NOBIA AB	CIE PLC	2015-11-12
NOKIA OYJ	ALCATEL-LUCENT SA	2015-11-12
NOTE AB	SPEEDBOARD ASSEMBLY SERVICES LTD	2018-11-01
NWF GROUP PLC	EVESONS FUELS LTD	2011-01-18
ORAPI SA	ARGOS HYGIÈNE	2012-05-16
ORGANOCLICK AB	BIOKLEEN MILJOKEMI AB	2016-11-11
PIERREL SPA	IFE EUROPE GMBH	2007-03-28
PILUM AB	ENVIPOWER AB	2012-06-29
PILUM AB	POLYPROJECT SWEDEN AB	2010-05-20
POLYTEC HOLDING AG	PEGUFORM GMBH	2008-08-28
PORTMEIRION GROUP PLC	ROYAL WORCESTER AND SPODE LTD	2009-04-24
PRODUKTY KLASZTORNE SA	DAZUMI SP ZOO	2016-12-22
PRYSMIAN SPA	DRAKA HOLDING NV	2011-01-05
Q-FREE ASA	OPEN ROADS CONSULTING INC.	2014-07-17
QUANTEL SA	NUVONYX EUROPE SA	2007-02-07
RAISIO OYJ	PRZEDSIEBIORSTWO PRODUKCYJNO-HANDLOWE SULMA SP ZOO ZAKLAD PRACY CHRONIONEJ	2012-03-20
RITCHEY PLC	ANIMALCARE LTD	2007-11-27
ROOTFRUIT SCANDINAVIA AB	EXOTIC SNACKS AB	2019-01-02
SAAB AB	ERICSSON MICROWAVE SYSTEMS AB	2006-06-12
SAES GETTERS SPA	MEMRY CORPORATION	2008-08-14
SAFRAN SA	ZODIAC AEROSPACE SA	2017-12-07
SAFRAN SA	L-1 IDENTITY SOLUTIONS INC.	2010-09-20
SAGEM SA	SOCIETE NATIONALE D'ETUDE ET DE CONSTRUCTION DE MOTEURS D'AVIATION SA	2004-10-29
SAMSONITE INTERNATIONAL SA	TUMI HOLDINGS INC.	2016-03-03
SANOFI-SYNTHELABO SA	AVENTIS SA	2004-04-26
SANOMA OYJ	ALMA MEDIA KUSTANNUS OY	2020-02-11
SCANFIL OYJ	PARTNERTECH AB	2015-05-25

SCHNEIDER ELECTRIC SA	XANTREX TECHNOLOGY INC.	2008-07-28
SCHNEIDER ELECTRIC SA	AMERICAN POWER CONVERSION CORPORATION	2006-10-30
SCHNEIDER ELECTRIC SA	KAVLICO CORPORATION	2004-03-23
SCIENCE IN SPORT PLC	PHD NUTRITION LTD	2018-11-14
SMITH & NEPHEW PLC	PLUS ORTHOPEDICS HOLDING AG	2007-03-12
SOLID STATE PLC	CREASEFIELD LTD	2016-06-01
SOLID STATE PLC	2001 ELECTRONIC COMPONENTS LTD	2013-12-23
SOLID STATE SUPPLIES PLC	WORDSWORTH TECHNOLOGY LTD	2005-08-11
SOLTECH ENERGY SWEDEN AB	FASADSYSTEM I STENKULLEN AB	2020-04-23
SOLTECH ENERGY SWEDEN AB	SWEDE ENERGY POWER SOLUTIONS AB	2019-03-12
SOLVAY SA	CYTEC INDUSTRIES INC.	2015-07-29
SOS CUÉTARA SA	MINERVA OLI SPA	2004-11-25
SPECTRIS PLC	OMEGA ENGINEERING INC.	2011-08-15
SSAB AB	RAUTARUUKKI OYJ	2014-01-22
STANELCO PLC	AQUASOL LTD	2004-05-06
STORYTEL AB	GUMMERUS KUSTANNUS OY	2019-09-17
SUSS MICROTEC SE	MEYER BURGER (NETHERLANDS) BV	2019-12-20
SYNTHOMER PLC	OMNOVA SOLUTIONS INC.	2019-07-03
TAGMASTER AB	CA TRAFFIC LTD	2017-04-27
TANDEM GROUP PLC	PRO RIDER MOBILITY LTD	2014-08-04
TELEFONAKTIEBOLAGET LM ERICSSON AB	ENVIVIO INC.	2015-09-10
TELEFONAKTIEBOLAGET LM ERICSSON AB	REDBACK NETWORKS INC.	2006-12-19
TELEFONAKTIEBOLAGET LM ERICSSON AB	MARCONI CORPORATION PLC'S TELECOMMUNICATIONS EQUIPMENT AND INTERNATIONAL SERVICES BUSINESSES	2005-10-25
THOMSON SA	MOVING PICTURE COMPANY LTD, THE	2004-10-26
TRIFAST PLC	VIC VITERIE ITALIA CENTRALE SRL	2014-05-07
TRIFAST PLC	SERCO-RYAN LTD	2005-09-20
TRINITY MIRROR PLC	LOCAL WORLD HOLDINGS LTD	2015-10-28
TULIKIVI OYJ	KERMANSAVI OY	2006-04-03
TYMAN PLC	TRUTH HARDWARE CORPORATION	2013-05-01
VAISALA OYJ	LEOSPHERE SAS	2018-10-04
VALEO SA	JOHNSON CONTROLS AUTOMOTIVE ELECTRONICS SAS	2005-01-10
VALNEVA SE	CRUCELL SWEDEN AB	2015-01-05
VIDRALA SA	LA MANUFACTURE DU VERRE	2007-06-05
VIDRALA SA	RICARDO GALLO - VIDRO DE EMBALAGEM SA	2003-07-24
VIOHALCO SA/NV	SIDENOR HOLDINGS SA	2015-07-10
VISCOFAN SA	GLOBUS GROUP PTY LTD	2018-11-26
VISLINK PLC	ADAPTIVE BROADBAND CORPORATION'S MICROWAVE RADIO COMMUNICATIONS (MRC) BUSINESS	2000-06-27

VISTULA & WÓLCZANKA SA	W KRUK SA	2008-05-05
VIVALIS SAS	INTERCELL AG	2012-12-16
VRG SA	BYTOM SA	2018-11-30
WILMINGTON GROUP PLC	REED BUSINESS INFORMATION SA	2013-03-04
ZAKLADY AZOTOWE W TARNOWIE - MOSCICACH SA	ZAKLADY AZOTOWE PULAWY SA	2012-12-21
ZAKLADY AZOTOWE W TARNOWIE - MOSCICACH SA	ZAKLADY CHEMICZNE POLICE SA	2011-06-15
ZAKLADY URZADZEN KOMPUTEROWYCH ELZAB SA	MEDESA SP ZOO	2004-01-31

Source: Zephyr database.