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The short-term impact of M&A deals on the financial performance of European bidders

Master Thesis

Master Thesis by the 2nd year student
Concentration — Management
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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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31.05.2023

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31.05.2023

ABSTRACT

Master Student's Name	Andrei Buldovich
Master Thesis Title	The short-term impact of M&A deals on the financial performance of European bidders
Faculty	Master in Management
Year	2022
Academic Advisor's Name	Dr. Egor Nikulin
Description of the goal, tasks and main results the research	The research aims to investigate the impact of mergers and acquisitions (M&A) on the short-term financial performance of acquirers in Europe. Despite the widespread use of M&A transactions in the corporate environment, there is still ambiguity and debate regarding their ability to create value for acquirers. This study addresses this research gap by analyzing the effects of M&A deals on financial performance of the bidders in the European region. By using a sample of European and UK M&A announcements in a period from 2010 to 2019, the study identifies factors that may influence the impact of M&A on short-term financial performance. The research concludes that M&A deals have a small but significant positive short-term impact on financial performance of acquirors in Europe. It identifies factors such as the cross-border status of the deal, legal status of the target, and payment methods as significant influencers of short-term returns. Notably, the study reveals a positive correlation between Cumulative abnormal returns (CAR) and domestic deals paid in stocks for Continental Europe and the European market. Additionally, a negative correlation is observed between the legal status of the firm and returns of the bidder.
Keywords	Europe, mergers and acquisitions, takeovers, event study, cross-border deals, short-term returns, CAR

АННОТАЦИЯ

Автор	Бульдович Андрей Дмитриевич
Название ВКР	Краткосрочное влияние сделок слияния и поглощения на финансовые показатели европейских компаний-покупателей
Факультет	Менеджмент
Год	2022
Научный руководитель	Никулин Егор Дмитриевич
Описание цели, задач и основных результатов исследования	Цель данного исследования - изучить влияние слияний и поглощений (M&A) на краткосрочные финансовые показатели компаний-покупателей в Европе. Несмотря на широкое распространение сделок M&A, до сих пор существует неопределенность и споры относительно их способности создавать дополнительную ценность для компаний-покупателей. Данное исследование устраняет этот пробел, анализируя влияние сделок M&A на финансовые показатели в европейском регионе. Используя выборку сделок о слияниях и поглощениях в континентальной Европе и Великобритании за период с 2010 по 2019 год, исследование выявляет факторы, которые могут повлиять на краткосрочные финансовые показатели компаний-покупателей при сделках слияния и поглощения. Результаты исследования показывают, что сделки M&A оказывают небольшое, но статистически значимое положительное краткосрочное влияние на финансовые показатели компаний-покупателей в Европе. В исследовании определены такие факторы, как трансграничный статус сделки, юридический статус объекта приобретения и способы финансирования, как значимые факторы, влияющие на краткосрочную доходность. В частности, исследование выявляет положительную корреляцию между совокупной избыточной доходностью (CAR) и оплатой внутренних сделок акциями для континентальной Европы и европейского рынка в целом. Кроме того, наблюдается отрицательная корреляция между юридическим статусом объекта приобретения и CAR компании-покупателя.

Ключевые слова	Европа, Великобритания, слияния и поглощения, поглощения, событийный анализ, трансграничные сделки

Table of contents

INTRODUCTION

Over the past 30 years, M&A transactions have been an important component of the corporate environment and strategy. The main rationale behind such corporate behavior has been the desire to directly or indirectly increase acquirers' shareholder wealth by a variety of means ranging from reforming top-management structure (Tuch, O'Sullivan, 2007) to creating effective synergies.

The main expected outcome of the takeovers is consequent corporate efficiency and a corresponding increase in the assets, sales, and market share of a company, and, consequently, maximizing long-term shareholder wealth (Sternberg, 2000). However, it is still widely argued in the academic environment whether the post-M&A of acquirers truly creates value and consistent results have not been shown. McGrath (2011) stated that M&As provide opportunities for growth and risks of failure. Although merger or acquisition can bring economies of scale, and access to new geographic regions and technologies, it can also lead to negative consequences for a company if it fails to attain its objectives. Thus, for managers and shareholders, it is crucial to understand what constitutes a successful merger or acquisition. Therefore, the research is mainly focused on the main question regarding M&A, whether the deals create value or not (Cuypers et al. 2017, Meckl, 2016).

Literature review demonstrates ambiguous results regarding the created value from M&A using different variables and metrics including event study, accounting, subjective assessment, and mixed metrics. Despite the widespread use of these methods, there is still ambiguity in the results, with some studies showing positive outcomes and others showing negative or neutral effects. Moreover, each study has region and industry specificity that leaves a lot of room for interpretation of the results. This highlights the complex nature of M&A transactions and the need for careful analysis and evaluation before embarking on such a strategy.

This Master Thesis will investigate the impact of M&A on the financial performance in the European region. It will analyze the various types of M&A and their effects on financial performance. It will discuss current trends and highlight features of the region. In order to analyze the impact, event study methodology, a statistical technique that measures the effect of a particular event on a company's stock price with a regression model will be used. The event study approach is able to isolate the effect of an event, such as an M&A, from other influences on financial performance.

This thesis contributes to the well-researched field of mergers and acquisitions. The aim is to make previous research and existing methods more applicable by sampling data in a different setting and with different market environments, specifically European and UK M&A announcements. The new setting sheds light on both emerging and developed markets, which have been less researched in the literature due to the increasing popularity of emerging markets. Selecting European and UK markets for in-sample analysis can also provide additional insights, according to the literature they significantly differ from the markets of the US and Canada in terms of corporate governance and market conditions.

By selecting European and UK markets, the study can investigate inner features in relation to stock market reactions to M&A announcements.

Finally, by duplicating, merging, and investigating partial perspectives from other research and expanding them to a different environment, this work adds to and sheds new light on the papers of Mateev (2018), Ellis et al. (2017), Tao et al. (2017), Dutta et al. (2013), and Starks and Wei (2013).

Moreover, some authors suggest that the European market is unique compared to other regions, as it is composed of many different countries with their own regulations and cultural differences. This can lead to greater complexity and uncertainty in M&A deals, which can in turn affect stock market reactions. Different corporate governance systems are also considered to be a cause of smaller activity in Continental Europe comparing to the US. Nevertheless, activity of M&A has increased in the European region after the crisis of 2008, attracting more researchers nowadays. (Bessler et al. 2020)

Despite the fact that M&A activity is a widely researched topic, M&A impact is still underdeveloped in the context of different regions of the world. Furthermore, the effect of M&A activity in the second decade of the 21st century, in general, is a research field with a small number of scientific articles on the topic. Thus, the aim of the research is to investigate the level and nature of the impact of M&A activities on acquirers.

Thus, despite the fact that mergers and acquisitions are a deeply studied subject, there is a research gap regarding the impact of M&A in recent years in Europe. The topic of mergers in Europe remains underdeveloped, especially in the last 10 years.

The main focus of the research is the short-term effect of M&A on the financial performance of the acquirer. The short-term event study method is a well-established research tool that has been widely used in finance and economics and relies on the premise of the Efficient Market Hypothesis (Malkiel and Fama, 1970). It provides a robust theoretical basis for its use. By detecting abnormal equity price changes in response to new market information

available in the financial market, the short-term event study method enables researchers to quantify the impact of a specific event on a firm's shareholder value (MacKinlay, 1997). Moreover, in the long-term study there are often many factors that contribute to a particular outcome, and it can be difficult to isolate the effect of a single event. Changes in the economy or industry trends may have an impact on the outcome of the study, making it difficult to attribute changes solely to the event being studied.

Research Question: To what extent do mergers and acquisitions impact the short-term financial performance of acquirers in Europe?

Thus, the research goal is to determine the impact of M&A on the short-term financial performance of acquirers in Europe.

Based on the research question and goal formulated, the following research objectives are proposed:

- Based on a literature review of relevant studies on mergers and acquisitions in Europe, to outline main factors, focusing on the short-term financial performance of acquirers.
- To formulate the research model abnormal returns using 2 models for estimation and analyze cumulative abnormal returns across both models and different event windows.
- To conduct its empirical testing on the sample of mergers and acquisitions in Europe over the last 10 years, identifying the factors that may influence the impact of M&A on the short-term financial performance of acquirers.
- Compare the findings with previous studies on M&A in Europe and draw conclusions on the extent to which mergers and acquisitions announcements impact the short-term financial performance of acquirers in Europe.

The study aims to examine the short-term impact of M&A deals using event study methodology. The theoretical basis of the study is grounded in event study methodology. The study employs a quantitative research design, secondary data from financial databases, and regression analysis to test the relationship between M&A deals and cumulative abnormal returns of the bidder.

The contribution of the study is the following:

By utilizing event study methodology, this research isolates the effects of M&A events on stock prices from other factors influencing financial performance. Additionally, the study expands the existing literature by focusing on European and UK M&A announcements, providing insights into both developed and emerging markets that have been less explored in

prior research especially in the last decade. This approach helps to identify key factors that impact the short-term financial performance of companies in these markets nowadays.

The practical contribution of this study is significant for stakeholders involved in mergers and acquisitions.

Firstly, for companies planning to engage in M&A activity, the findings of this study assist in making informed decisions regarding the potential impact of M&A deals on their financial performance. By identifying the factors that positively or negatively impact short-term financial performance, companies can better structure their deals to maximize the benefits and minimize the risks.

Study provides insights into the potential impact of M&A deals on the stock prices of companies in Europe for investors. By analyzing cumulative abnormal returns, investors can gain a better understanding of the market's reaction to M&A events and make more informed investment decisions and find more attractive opportunities on the market.

Finally, regulators can use the findings of this study to improve their oversight and regulation of M&A activity in Europe. By identifying factors that may lead to negative impacts on financial performance, regulators can design policies to mitigate the risks associated with M&A deals.

The subsequent sections of this paper are arranged as follows: chapter 1 presents the theoretical background of M&A covering global and European trends and specifics for the past 10 years. In addition, the section provides research on different points of view on the typification of the deals and existing approaches to evaluation of the impact of M&A. The chapter ends with a description of the consequences of M&A and the formulation of hypotheses. Chapter 2 presents the data sample, methodology. Chapter 3 presents the empirical results of the study and discusses practical implications and limitations of the study.

1. Theoretical aspects of M&As

1.1. M&A: general overview

Merger and Acquisition (M&A) is one of the ways companies take to grow faster than organic business growth and can be a channel for companies to strengthen their global market position and increase competitiveness (Sui et al, 2016). The process involves identifying potential targets, conducting due diligence, negotiating deal terms, and integrating the acquired company into the acquiring company's operations. M&A is a complex and time-consuming process that can be costly, and the failure to properly manage any stage can lead to the failure of the entire endeavor. It encompasses a wide range of activities, such as company purchases and sales, mergers, cooperation, alliances, joint ventures, company safeguards and successors, management buy-outs and buy-ins, initial public offerings (IPOs), as well as necessary conversion measures and restructuring.

M&A is a strategic decision that companies make to achieve their business goals. The reasons behind M&A can be diverse, ranging from the desire to expand market share, to boost profitability, to acquire new technologies, to diversify business lines, or to gain access to new markets.

According to Copeland and Weston (1988), M&A involves issues related to corporate restructuring, corporate control, and changes in the ownership structure of firms. Other definitions take a more inclusive approach and encompass all transactions involving the transfer of control and management powers to companies, including contractual cooperation.

Overall, M&A has the potential to create significant value for companies and their stakeholders, but it also involves risks and challenges. A thorough understanding of the M&A process and the underlying business dynamics is critical to making informed decisions and achieving successful outcomes.

1.2. M&A motives and market reaction theory

This chapter explores various perspectives, theories, and hypotheses related to mergers and acquisitions (M&A) activities. In most cases, target companies experience significant

positive short-term returns around the announcement date, which is possibly due to the premiums typically incorporated in such deals. In contrast, acquirors often experience significant negative or only slight positive returns in the short run (Agrawal and Jaffe 2000). Despite this, M&A transactions remain a popular tool for corporate financing due to their potential benefits. Thus, there should be more motivations for such transactions.

According to Trautwein (1990), mergers can be motivated by seven strategic groups. The main four groups include:

The Efficiency theory, which explains the behavior of the company as receiving synergies, focusing on generating financial, operational, and managerial synergies.

The Monopoly theory, which is common in horizontal mergers, aims to increase market power by acquiring a competitor.

The Valuation theory, that states that a transaction can be executed due to a potential information advantage of the bidding company's manager regarding the target.

The Empire-building theory, that explains that acquiring company managers may seek to maximize their own utility instead of shareholder value.

J.L. Bower (2001) summarizes M&A strategies into five categories. The first is for companies with substantial overcapacity to acquire other companies to increase market share. The second is "Geographic Roll-up M&A," which benefits from economies of scope and scale. The third strategy involves extending a company's product or market portfolio through acquisition. The fourth is "M&A as R&D," where firms acquire other companies to maintain a stable research and development pipeline such as biotech and high-tech. The last approach involves betting on new emerging industries to establish an early and strong position.

Nguyen, Yung, and Sun (2012) found that 73% of their sample transactions were related to advantages connected with the timings on the market, and about 80% of these transactions had combined motives. The second largest result was related to agency motives and/or hubris theories, indicating that value-increasing as well as value-destroying motives can be involved in a single merger.

The agency theory, which addresses the central point that the interests of shareholders and managers may not be aligned, causing problems within the context of a firm specifically. Managers may attempt to pursue and prioritize their own interests instead of acting in the shareholders' interests. The occurrence of diversified M&As for risk reduction, empire building through excessive funds rather than maximizing shareholder value through M&A indicate managers acting out of self-interest with value-destroying M&As or eventually being taken over themselves consequently. To resolve these problems or to realign the interests of both

parties, additional efforts in monitoring and governing the relationship are necessary, also in terms of financial costs. The origin of such resulting agency problems appears to be caused by an uneven distribution of information between the involved parties. More specifically, this refers to situations in which one party possesses more or different information than the other party.

One of the first papers focusing on the economics of asymmetric information is Akerlof's (1970) paper, which investigates the market mechanisms when potential buyers have uncertainty about the quality of products and provides a structure for determining the economic costs of dishonesty. Asymmetric information is a common issue in M&A activity, particularly between deal insiders and outside investors, as well as between the acquirer and target. In such situations, market efficiency may not hold, which hinders investors' ability to accurately evaluate M&A activity and, in turn, affects the initial stock market reaction to announcing M&As and subsequent performance. In the case of deal insiders and outside investors, acquirer and target can have shared information about possible future synergies after completing the M&A process, which might not be available to outside investors on the public market. However, the parties involved in the deal are aware that they cannot just make such information public, as it might benefit other outsiders or competitors and might even be destructive for their interests.

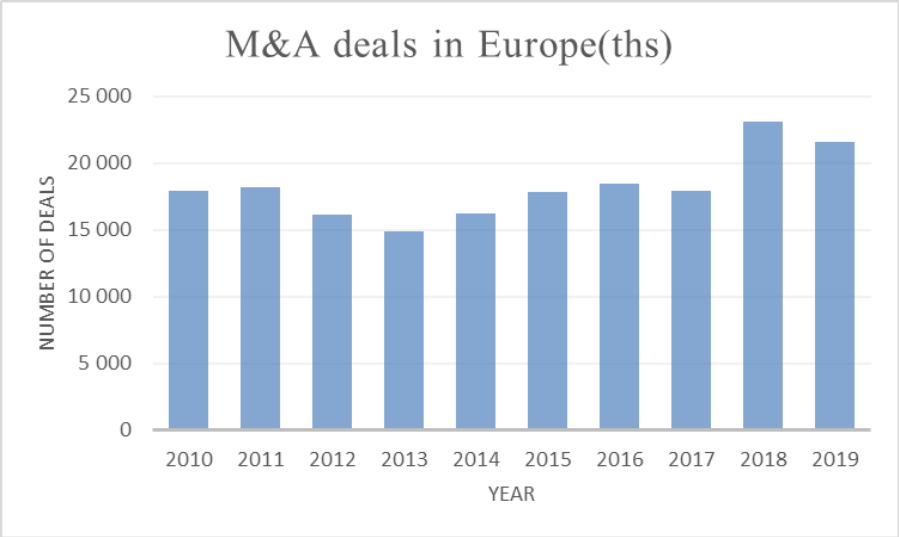
It is worth to mention that the assumption of market efficiency does not hold, and thereby also the investors' ability to evaluate M&A activity accurately, which influences the alignment of the initial stock market reaction to announcing M&As and the subsequent performance. To address the unequal availability of information, Spence (2002) examines the assumptions of signaling theory. This theory proposes that information can be communicated through signals, allowing those with more information to share it with those who have less. Sending such signals gives parties, in this case acquirers, the opportunity to convey a certain level of perceived quality about the value of the target or the deal itself towards outsiders, without revealing the possessed information.

Additionally, investors may need to rely on other information or search for other sources of information to be able to evaluate firm activities accurately. Furthermore, observing the initial stock market reaction to M&A announcement as a measure for performance addresses the assumption of market efficiency, which assumes that investors can evaluate firm activities and value-maximizing criteria objectively due to information access, and prices change only due to good, sensible information.

Finally, additional theoretical perspectives arise in the assumption of managerial hubris and the assumption of market timing eventually. The managerial hubris hypothesis explains the rationale of M&As as an average overpayment from acquirers due to overestimating the gains from M&As. Additionally, Martynova and Renneboog (2008) indicate that a first sample of successful takeover encourages other firms to conduct M&A activities also, thereby suffering from managerial hubris as they mimic the actions of successful cases instead of a clear economic sense-making base. The assumption of market timing predicts that managers use overvaluation for acquiring real assets in a more favorable way. This provides connections to other theoretical perspectives, such as asymmetric information, signaling theory, and the agency problem.

1.3. M&A in European region

Figure 1.1. Number of merger and acquisition (M&A) deals in Europe



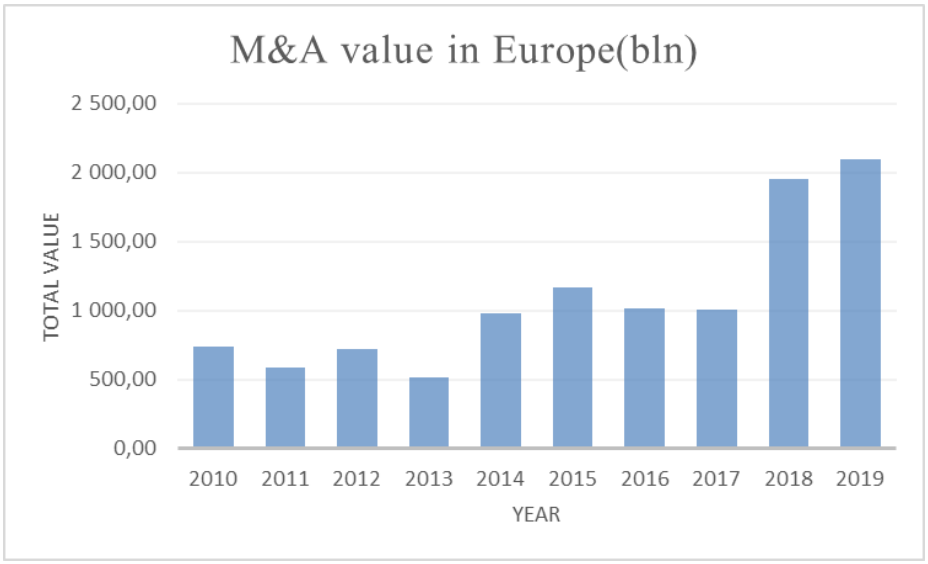
Source: Statista, 2023

Looking at the data from 2010 to 2019, the number of M&A deals in Europe appears to have had its ups and downs and there is a slight trend for increase in the second half. In 2010, there were 17,979 M&A deals, which increased slightly to 18,202 in 2011. However, the number of deals decreased in 2012 - 2013 to 14,905, which was the lowest number of deals during this time period. The number of deals then began to increase again in 2014 to 18,430 in 2016.

In 2017, there was a slight decrease in the number of M&A deals to 17,946, but this was followed by a significant increase in 2018 to 23,110, which was the highest number of deals during this time period. Finally, in 2019, the number of M&A deals decreased again to 21,582.

Overall, while there were fluctuations from year to year, the trend in the number of M&A deals in Europe shows a gradual increase over the past decade.

Figure 1.2. Value of merger and acquisition (M&A) deals in Europe



Source: Statista, 2023

In 2010, the M&A value was 739.05 million euros. The value decreased in 2011 to 591.24 million euros, but increased again in 2012 to 722.09 million euros. In 2013, the M&A value decreased to 518.85 million euros. The value then increased in 2014 to 977.92 million euros, and continued to increase in 2015 to 1,165.48 million euros. The M&A value decreased slightly in 2016 to 1,012.52 million euros, and remained relatively stable in 2017 with a value of 1,007.99 million euros. The M&A value then increased significantly in 2018 to 1,957 million euros, and continued to increase in 2019 to 2,094 million euros. The general trend of the M&A values in Europe from 2010 to 2019 is an increase, with some fluctuations from year to year.

In recent years, a growing body of literature has employed event study methodologies to analyze the effects of merger control within Europe as opposed to the United States. These studies offer a distinct advantage over previous criticisms of the methodology, as they are able to accurately identify competitors in a significant subset of European mergers through the utilization of published decisions made by the European Commission. This information is generally not available in the case of U.S. mergers.

Additionally, these studies depart from the traditional focus on the average abnormal competitor return, which is often found to be not statistically different from zero. Instead, they use estimated abnormal returns to address other policy questions. For example, Duso, Neven, and Roller (2007) examine 167 EU mergers that took place between 1990 and 2002, classifying

46 as anti-competitive and 121 as pro-competitive. The identification assumption used in this study is the inverse relationship between competitor stock prices and consumer welfare, with an event window of up to five days before and after the announcement. The authors also provide an explanation of how the EU institutional and political environment may contribute to false positive and negative results.

Duso, Gugler, and Yurtoglu (2010) provide additional evidence for the effectiveness of event study methodologies in analyzing the effects of EU merger control. The study demonstrates that there is a positive and statistically significant correlation between the estimated abnormal returns and ex-post accounting profit when a sufficiently long event window of up to 50 days prior to the event is used.

In a follow-up study, Duso, Gugler, and Yurtoglu (2011) expand upon this finding by using an event window of 50 days prior to and five days after the announcement. They demonstrate that EU merger control has been partially effective in reversing positive abnormal returns when they are observed, after adjusting for an estimated probability of antitrust interference.

Duso, Gugler, and Szucs (2013) further extend these findings by examining 368 EU mergers between 1990 and 2007. The study also shows how the 2004 merger reforms have partially improved EU merger control. The approach used in these studies involves the classification of individual cases as either anti- or pro-competitive based on whether abnormal returns are positive or negative. However, it is acknowledged that this approach may have low precision due to stock market noise. Additionally, the possibility of alternative mechanisms affecting abnormal returns is acknowledged but generally ignored in the analysis. For example, Duso, Neven, and Roller (2007) acknowledge that merger announcements may signal potential competitor efficiencies as well as "in-play" or "out-of-play" effects. However, they argue that none of these mechanisms have a convincing empirical or theoretical basis and hence are ignored in the analysis.

Short-term announcement effect in Europe

This section aims to explain the impact of individual events on the announcement day, as well as a few days before and after. By examining the excess returns of the buying companies, a relatively consistent pattern emerges (see Appendix 1). For example, between 2000 and 2010, Andriosopoulos et al. (2016, p. 356) reported an Average Abnormal Return (AAR) of 0.38% on the announcement day in the UK, with a significance level below 1%. Similarly, Zaremba and Płotnicki (2016, p. 259) found a 0.21% AAR on the announcement

day in Central and Eastern Europe between 2001 and 2014. Martynova and Renneboog (2011, p. 228) calculated a highly significant AAR of 0.53% for takeover announcements in Europe between 1993 and 2000. In the UK between 1997 and 2006, Spyrou et al. (2011, pp. 710 - 711) found an AAR of 0.04% for high market capitalisation acquirers and 0.33% for low market capitalisation acquirers. It is worth noting that on the day of the takeover announcement, the AAR was mostly above zero, but not above one percent.

Moreover, looking at the Cumulative Average Abnormal Return (CAAR) over the three days before and after the announcement of the buying companies (3-day CAAR), a similar pattern emerges. For instance, in the UK, Andriosopoulos et al. (2016, p. 356) and Mateev (2017, p. 198) found strongly significant 3-day CAARs of 0.60% and 0.87%, respectively. In continental Europe, a 3-day CAAR of 1.05% was calculated, although the difference with the UK was not statistically significant (Mateev 2017, p. 198). In Germany, the CAAR between 2001 and 2010 was 0.60% (Mager and Meyer-Fackler 2017, p. 40). However, in the only article related to Austria, a non-significant 3-day CAAR of 0.18% was obtained between 1998 and 2010 (Brunner-Kirchmair et al. 2017, p. 126). Other studies calculated CAARs for the whole of Europe. For example, with a sample size of 2,419 takeovers, Martynova and Renneboog (2011, p. 228) arrived at a highly significant 3-day CAAR of 0.72%. The result of Goergen and Renneboog (2004, p. 19) was also 0.70%, but in this case, it did not include the day after. Craninckx and Huyghebaert (2011, p. 22) calculated a similar, highly significant 3-24 day CAAR of 0.78% in Europe when non-listed targets were purchased.

Finally, by examining the Cumulative Average Abnormal Returns (CAARs), which calculate the excess returns five days before and after an announcement (11-day CAAR), one can determine whether the majority of the movement occurs only on the announcement day or also in the week before or after. Andriosopoulos et al. (2016, p. 356) found no noticeable difference between the 11-day CAAR and the 3-day CAAR, while Mateev (2017, p. 198) found a similar effect for the UK, with the 5-day CAAR being higher than the 3-day CAAR, but the 11-day CAAR being between the two. In continental Europe, the movement was observed to be strongest one day around the announcement day, and the 5-day and 11-day CAARs were both significantly lower. Martynova and Renneboog (2011, p. 230) also came up with similar results. Only in Germany was the 11-day CAAR at 1.70% higher than the 3-day CAAR at 0.60% (Mager and Meyer-Fackler 2017, p. 40).

Hence, the following hypothesis needs to be tested.

H1: The M&A announcement in Europe has significant positive impact on stock returns

1.4. Factors affecting stock price after M&A

1.4.1. Payment method

Cash and stock acquisitions are two common methods of payment used in mergers and acquisitions (M&A). In a cash acquisition, the acquiring firm pays for the target firm in cash, whereas in a stock acquisition, the acquiring firm pays for the target firm in shares of its own stock.

Cash acquisitions are attractive to target firms as they provide a guaranteed amount of money, reducing the risk of uncertainty associated with stock. They also provide immediate liquidity to target firm shareholders, who can use the cash received to invest in other opportunities. However, cash acquisitions can be expensive for the acquiring firm as they require a large amount of cash to be raised, and may limit their financial flexibility in the future.

On the other hand, stock acquisitions are attractive to the acquiring firm as they allow them to conserve their cash, which can be used to finance future growth. Stock acquisitions can also provide a tax advantage as the transaction can be structured as a tax-free exchange. Additionally, stock acquisitions provide an opportunity for the target firm shareholders to participate in the future growth of the combined firm.

Ultimately, the choice between cash and stock acquisitions depends on the motivations, resources, and goals of both the acquiring and the target firm. A cash acquisition may be more appropriate if the target firm is looking for immediate liquidity and the acquiring firm has sufficient cash resources, while a stock acquisition may be more appropriate if the acquiring firm is looking to conserve its cash and provide the target firm shareholders with an opportunity to participate in future growth.

The choice of payment methods plays a big role in determining the creation of value for stakeholders and especially for acquiring and target companies. This study focuses mainly on the returns of acquirers.

One of the reasons for choosing stock financing is to share the risk of misevaluation of the target firm. Therefore, it is usually considered a negative signal for the market while assessing the bidder. These hypotheses have been proven by various studies that stated that

stock offers are accompanied by a negative market reaction and valuation of the acquiring company (Travlos, 1987; Wansley, Lane, & Yang, 1987; Amihud et al., 1990, and Brown & Ryngaert, 1991). However, Kohers and Kohers (2000) found that the announcement of high-tech acquisitions leads to a significantly positive abnormal return, regardless of whether the financing is done through cash or shares.

The points of view on the correlation between acquirers' returns and payment methods in more recent papers also vary.

Some state that the M&A event does not lead to an increase in shareholders' value and, therefore, has no explanatory power in acquirers' returns (Golubov et al., 2016). Other researchers tend to claim that cash financing is more likely to lead to positive abnormal returns. Martynova and Renneboog (2011) studying 2109 European M&A between 1993 and 2001 found that while stock-financed deals have a positive but insignificant effect on returns, all-cash M&A lead to positive abnormal returns (+1.03%) around announcements. Similar research in US M&A in the period from 2010 to 2015 analyzing 3811 M&A has shown that fully stock financed deals have insignificant results around the announcement (Alexandridis et al., 2017).

Thus, it can be stated that, although according to some papers mixed and stock-financed M&A deals can also have positive returns, the majority of researchers tend to claim that it has zero or negative abnormal returns around the announcement. Cash deals, however, can lead to a small increase in abnormal returns. However, we still need to check Stock deals to enhance the analysis.

Hence, the following hypothesis needs to be tested.

H2: Cash-financed M&A transactions are positively correlated with stock returns.

H3: Stock-financed M&A transactions are negatively correlated with stock returns.

1.4.2. Cross-border and domestic M&A

Both cross-border and domestic M&A have been widely researched and analyzed in the academic literature.

Cross-border M&A refers to the acquisition of a company located in a different country than the bidder. Thus, the consequent geographic, cultural, institutional, and other differences between the two firms evolve. These transactions are often driven by the desire to enter new markets, diversify product portfolios, and access new technologies. Research has shown that

cross-border M&A can bring significant benefits to the acquiring firm, including increased market research, higher revenue, and improved operational efficiency.

Scholars have examined various aspects of cross-border mergers. For example, Erel et al. (2012) identify geography, disclosure quality, and bilateral trade as key drivers of cross-border mergers, while Ahern et al. (2015) explore the impact of national culture on merger volume and synergies. Meanwhile, Bonaime et al. (2018) found the effects of policy and political uncertainties on merger activity.

Returns in cross-border mergers are influenced by differences in legal systems (Moeller & Schlingemann, 2005), corporate governance standards, and institutional practices (Chari et al., 2010; Martynova & Renneboog, 2008b) between the acquirer and target countries. Additionally, blockholders in bidding firms and investor protection and disclosure regulations affect returns, particularly in mergers between UK and Continental European firms (Martynova & Renneboog, 2011). Moreover, cross-border mergers with more efficient acquirers tend to be more successful (F. Dong & Doukas, 2022). Nevertheless, determinants of cross-border deals remain underdeveloped (Bris & Cabolis, 2008; Erel et al., 2012; Gregory & O'Donohoe, 2014), while domestic acquisitions are well-researched (Berkovitch & Narayanan, 1993).

Domestic M&A refers to the acquisition of a company within the same country. Domestic M&A can offer many of the same benefits as cross-border M&A, but with fewer of cultural, legal, and regulatory challenges.

Studies on domestic M&A have generally found that these transactions lead to positive abnormal returns for the acquiring firm. This may be due to the lower cultural, legal, and regulatory barriers associated with domestic M&A, as well as the fact that these transactions are often driven by the desire to improve operational efficiency and access new technologies. In the different papers over the years, it was found that domestic acquiring firms earn higher abnormal return than cross-border bidders (Moeller et al., 2005; Starks and Wei, 2013, and Mateev, 2019).

Hence, the following hypothesis needs to be tested.

H4: Domestic M&A transactions are positively correlated with stock returns.

1.4.3. Deal value

The effect of deal size on short-term stock returns is a widely discussed topic in current literature. Adding deal size to the model is crucial when analyzing the stock market's reaction

to M&A deals, as several studies have shown (Eckbo et al., 2018; Ellis et al., 2017; Andriosopoulos et al., 2016; Gubbi et al., 2010; Faccio & Masulis, 2005; Goergen & Renneboog, 2004; Fuller et al., 2002). A rising deal size is expected to increase the risks of value destruction for the acquirer due to the impact of asymmetric information and uncertainty about synergistic outcomes. This is because the M&A deal's relatively bigger impact increases the risks of value destruction for the acquirer. Therefore, independent variable deal size, measured as the natural logarithm of the deal value in millions of euros, is added to all regression models. This gives a better understanding of the impact of deal size on short-term stock returns and enhance the analysis of M&A deals.

Hence, the following hypothesis needs to be tested.

H5: The size of M&A deal is negatively correlated with stock returns

1.4.4. Industry relatedness

Acquisitions within the same industry or horizontal mergers, as well as those in different industries, still have a significant impact on the stock market reaction. It is generally believed that acquisitions within the same industry are better received by the capital market, as there is less asymmetry of information, the buyer has a better understanding of the target industry, and can better assess the potential for synergies. This means that the risk associated with acquisitions within the same industry should be lower. However, it can also be argued that acquisitions in different industries reduce risk due to their diversifying nature (Lim and Li 2016).

Martynova and Rennebug (2011, p. 229) found that acquisitions within the same industry were significantly better received by the capital market in all time intervals. For example, the 3-day CAAR was 0.85% for acquisitions within the same industry and 0.49% for acquisitions in another industry. However, Mateev (2017, p. 209) did not find any significant differences between acquisitions within the same industry and those in other industries in the short-term.

In order to investigate the relation between industry relatedness and stock returns, the following hypothesis is formulated:

H6: Industry relatedness is positively correlated with stock returns

1.4.5. Market capitalization

Market capitalization can affect the announcement returns of a bidding firm in an acquisition in several ways.

Size effect: Larger firms, as measured by market capitalization, tend to experience smaller announcement returns compared to smaller firms. In particular, Eckbo and Thornburn (2000) claim found that smaller companies tend to have greater returns.

In addition, it was found the announcement return for acquiring-firm shareholders is roughly two percentage points higher for small acquirers. The reason is that the acquisition is a smaller portion of their overall operations, and its impact on their performance is less significant (Moeller, Schlingemann, and Stulz, 2004).

Diversification: Firms with larger market capitalization may already be more diversified, and therefore the acquisition may have a smaller impact on risk reduction and potential synergies, reducing the potential for positive announcement returns (Larry, Lang and Stulz, 1994).

Hence, the following hypothesis needs to be tested.

H7: The size of bidder is negatively correlated with stock returns

1.4.6. Relative size

The size of the acquiror compared to the size of the deal can have a significant impact on the success or failure of the acquisition.

According to the findings of Asquith et al. (1983), there is a positive correlation between the ratio of the target's equity capitalization to the bidder's equity capitalization and the returns for the bidder. This relationship is stronger for smaller acquirers, and it is worth exploring whether this characteristic can contribute to explaining the size effect. However, the results are different and negative correlation was found in Travlos (1987).

Fuller et al. (2002) conducted a study on the correlation between relative size and the success of M&A deals. The results of their study showed a positive correlation between relative size and the success of the deal only in case of private targets. While the results of acquiring public targets depend on payment method.

Subsequent study by Kiymaz and Baker (2008) also found similar positive correlations between relative size and the success of M&A deals. These findings suggest that acquirors

should carefully consider the relative size of the target company when evaluating potential acquisition targets.

H8: The relative size of bidder is positively correlated with stock returns

1.4.7. Legal status of the target company

When it comes to mergers and acquisitions, the legal status of the target company plays a significant role in determining the excess returns upon announcement. This distinction is particularly important between publicly listed and privately held, non-listed companies.

One argument that has been put forth is that the takeover market for non-listed targets is not as liquid, primarily because these companies tend to be smaller and less well-known. As a result, there is often less competition for acquiring non-listed companies. This lack of competition can lead to a lower premium in the deal amount compared to publicly listed companies. As a result, non-listed companies may be more valuable takeover targets (Mateev 2017, p. 201). The same findings that unlisted target firms perform better than their public counterparts were proved a bit earlier in 2015 (Rani, et al).

The assertion that acquisitions of non-listed targets are more favorably received in the short-term is supported by empirical findings. For instance, according to Mateev (2017, p. 202), the 3-day CAAR for non-listed firms was 1.36%, compared to -1.52% for listed firms.

It is important to note, however, that there are exceptions to this trend. As noted by Martynova and Renneboog (2011, p. 229), during the run-up to the announcement and the cumulative abnormal announcement return (CAAR) of -60 to +60, acquisitions of listed targets had a higher excess return.

To summarize, while non-listed targets may face less competition in the takeover market, we should not underestimate their value as potential takeover targets. As with any investment, it is crucial to conduct a thorough analysis to determine the potential risks and rewards of acquiring a non-listed company.

Hence, the following hypothesis needs to be tested.

H9: The acquisition of private targets results in higher stock returns

1.4.8. Additional discussion

It is also worth to mention that other aspects for further research exist. There are debates on whether the size of the company affects its reaction to takeover announcements. Both absolute indicators, such as market capitalization, and relative ones, such as the market-to-book ratio, are crucial in determining the size. For the UK, companies with lower market capitalization showed significantly higher returns, especially on the AAR on the day of the announcement and on the 3-day CAAR (Spyrou et al. 2011, pp. 710-711). However, this determinant is still relatively understudied for Europe. Similar results were obtained in the United States between 1980 and 2001 with a sample of about 12,000 acquisitions. For example, a 3-day CAAR of 2.32% was calculated for buyers with a lower market capitalization, and 0.08% for buyers with a high market capitalization. As for the reasons behind these results, it was pointed out that buyers with a large market capitalization often have to pay a premium depending on the size of the transaction (Moeller et al. 2004, pp. 213-221).

The impact of the target's relationship to the buyer's offer was also examined in the two articles. A distinction is made between hostile and friendly takeover offers. With hostile takeovers, the leadership of the target opposes the capture. A worse stock market reaction is expected than in the case of friendly takeovers, since it is assumed that in the case of hostile takeovers, a higher premium will be paid for the transaction, and as a result, any synergistic effect will be lost. On the other hand, the reaction of the target companies should be better, because they can agree on a better deal (Martynova and Renneboog 2011, p. 214). Empirical studies have confirmed this statement, with friendly takeovers on the buyer's side resulting in significantly higher CAARs than hostile offers. Only in the case of the CAAR (-60;+60) did the effect change in both articles. This was also confirmed with respect to targets and led to a significant increase in CAAR in hostile takeovers (Gergen and Renneboog 2004, p. 21; Martynova and Renneboog 2011, p. 229).

1.5. Approaches to evaluation of M&A performance

Measuring post-M&A performance is a complex task as there are many factors that are hardly distinguishable and can significantly influence results. Thus, there is no common approach in academic M&A discussions. Schoenberg identifies 2 objective and 2 subjective methodologies to measure acquisitions: cumulative abnormal returns (CAR), managers' assessments, divestment data, and expert informants' assessments (2006). He concludes that in order to get a comprehensive result, multiple performance measures are required. Similar

research conducted by Zollo has shown 12 different approaches, while most of them used short-term window event approach, long-term accounting measures, and long-term window event measures (2008). The work that is based on a sample of Greek companies and extends the work of Schoenberg defines 3 measures: CAR, managers' assessments and accounting-based assessments, stating that accounting-based and managers' assessment approaches are positively correlated, while CAR has no correlation with either of them.

Thus, the first main cohort of papers is based on the analysis of financial statements. According to Chi et. Al (2011). It includes a comparison of various financial metrics of the bidder before and after the M&A.

The second main cohort consists of studies based on a market-based approach, namely, company shares return through an event study.

Therefore, in general, all studies can be divided into four main groups:

1. Event-studies (Market-based measures). An event study is a statistical method used to evaluate the impact of a specific event on the value of a company or a market. In the context of M&A research, an event study is used to analyze the financial impact of a merger or acquisition on the companies involved or on the market as a whole. The event study approach typically involves collecting data on the stock prices and other market-based metrics of the companies involved before and after the M&A event and then comparing these data to a benchmark (such as a market index, Fama-French 3 Factor Model, or some other model) to assess the impact of the event.
2. Accounting-based measures (Lu 2004; and Zollo and Singh 2004): The accounting-based measure is commonly used in studies to evaluate the financial performance of mergers, despite its limitations (Huian 2012). This method is easy to implement, as it allows for the calculation of various financial metrics. However, the information is subject to influence from accounting policies, legal regulations that vary between companies and countries, and the users of the accounting information.
3. Managers' subjective and expert informants' assessments (Brock, 2005; Homburg and Bucerius, 2006, and Hayward, 2002). Managers' subjective assessments and expert informants' assessments are both commonly used methods to evaluate the performance of M&As. Managers' subjective assessments involve self-evaluation by the managers involved in the M&A process, while expert informants' assessments involve evaluations by external experts who have knowledge and experience in the industry or field in which the M&A took place. Both methods have their own advantages and limitations and are often used in conjunction with other performance evaluation

methods, such as financial measures and operational metrics, to provide a more comprehensive understanding of the M&A's performance. Usually, results of the polls are summarized for the whole sample.

4. Case studies (Rhoades, 1998, Blaško et al., 2000). It involves an in-depth examination of a specific M&A event or a set of M&A events to understand the underlying factors that led to the M&A and its outcome. Case studies can be either a single-case study or multiple-case study. While case studies have the ability to provide a detailed understanding of the unique context and circumstances surrounding the M&A event, to identify patterns and themes that may not be evident in other types of research. The limitations of case studies in M&A research include:
    - the potential for researcher bias and subjectivity in the selection and interpretation of data
    - the difficulty in generalizing findings to other M&A events or contexts
    - the need for significant resources and time to conduct a thorough case study examination.

Nevertheless, case study for M&A is mostly used to identify some underlying factors that make M&A successful not only in financial terms or problems that occur during and after M&A deals.

As there has been a considerable number of M&A transactions in recent years, the use of accounting-based methods is complex and will not reflect the real impact on the company. Short-term window event measures and use of CAR, in this case, will be more accurate.

Early research on using event studies in merger analysis includes studies by Stillman (1983), Eckbo (1983) and Eckbo and Wier (1985). Stillman's study examines 11 horizontal mergers in the US that were challenged by competition authorities between 1964 and 1972, and finds only one instance of positive abnormal competitor return. Eckbo and Wier's studies look at a larger sample of up to 82 challenged US horizontal mergers between 1963 and 1981 and find positive and statistically significant average abnormal competitor returns, but suggest this is not due to anti-competitive market power effects. Later studies by Fee and Thomas (2004) and Shahrur (2005) replicate these findings for later periods and also examine effects on customers and suppliers.

The abovementioned studies on the topic have faced criticism for several reasons. One issue is that they often use small sample sizes of only a few dozen M&A events, which can lead to low precision in identifying anti-competitive effects. Additionally, these studies tend to use industry codes like SIC to identify competitors, which is problematic as these codes do not

accurately work regarding antitrust markets. Another concern is that the time frame used for analysis, often just a few days around the announcement, may be too narrow and not take into account anticipation effects that may occur much earlier. Lastly, these studies do not properly test for different mechanisms that may affect competitor stock prices, and may reject the possibility of anti-competitive effects based on a lack of statistically negative returns at the time of a merger challenge, without considering alternative explanations.

1.6. M&A consequences

M&A performance and success, the dependent variable this study researches, is a widely studied issue. For example, the meta-analysis conducted by David R. King in 2004 has shown that M&As, on average, do not lead to high financial performance. However, it stated that there could be modest negative effects for acquiring firms. Still, the authors came to the conclusion that factors impacting companies engaging in M&A are not clearly identified. It also suggests that non-financial motives could lead to M&A activities but the topic remained insufficiently explored. Tuch and O'Sullivan suggested that in the short run, M&As have no significant impact on shareholders' wealth, while long-term analysis shows overwhelmingly negative returns. (2007) They also point out that such factors as hostile acquisition, cash-paid transactions, and acquisition of larger targets tend to be more positive or at least less negative. Another meta-analysis examined the relationship between the relatedness of the target and the acquirer through the lens of creating synergies which are among the main means of creating wealth for shareholders. The results have shown positive effects that appeared only under specific conditions such as industry-, country-, and investor characteristics while suggesting a limited overall impact of relatedness factors on acquisition success (Homberg et al, 2016). Later meta-analysis (MecklI and Röhrle, 2016) came to similar results, stating that M&A activity does not show clear positive result and assuming that such transactions destroy rather than create value for firms. However, the research identified that cross-border transactions are more successful in terms of reaction of capital markets than domestic M&As.

1.7. Theoretical aspects conclusion

In conclusion, the literature review provides insights into various factors that can affect stock prices after mergers and acquisitions (M&A). The following hypotheses were formulated based on the existing research:

H1: The M&A announcement has a significant positive impact on stock returns
H2: Cash-financed M&A transactions are positively correlated with stock returns.
H3: Stock-financed M&A transactions are negatively correlated with stock returns.
H4: Domestic M&A transactions are positively correlated with stock returns.
H5: The size of M&A deal is negatively correlated with stock returns.
H6: Industry relatedness is positively correlated with stock returns.
H7: The size of the bidder is negatively correlated with stock returns.
H8: The relative size of the bidder is positively correlated with stock returns.
H9: The acquisition of private targets results in higher stock returns.

Mergers and acquisitions (M&A) are driven by various motives, reflecting the diverse goals and strategies of companies. These motives can range from the desire to expand market share, boost profitability, acquire new technologies, diversify business lines, or gain access to new markets. Over the past decade, the number of M&A deals in Europe has shown a gradual increase, albeit with some fluctuations from year to year. Moreover, one of the reasons to start M&A is creating wealth for its shareholders and some researchers have shown that it can lead to positive returns. Thus, it is necessary to study the phenomenon.

The literature suggests that the choice of payment method, whether cash or stock, can have varying effects on stock returns. Cash-financed M&A transactions have been found to be associated with small increases in abnormal returns, while stock-financed transactions tend to have zero or negative abnormal returns. However, there are some exceptions, such as high-tech acquisitions, which have been found to result in positive abnormal returns regardless of the payment method.

Cross-border and domestic M&A also have different implications for stock returns. Cross-border M&A transactions are influenced by factors such as legal systems, corporate governance standards, and institutional practices, which can affect the market reaction and returns. On the other hand, domestic M&A transactions have generally been associated with positive abnormal returns, likely due to lower cultural, legal, and regulatory barriers.

Deal size, measured by the value of the transaction, can impact stock returns. Larger deal sizes tend to increase the risks of value destruction and uncertainty, potentially leading to

negative abnormal returns. Furthermore, the relatedness of the industries involved in the M&A transaction can influence stock returns. Acquisitions within the same industry are generally better received by the market, as there is less information asymmetry and better assessment of potential synergies.

Market capitalization, the size of the bidder, has mixed effects on stock returns. Larger firms, in terms of market capitalization, may experience smaller announcement returns compared to smaller firms due to their already diversified nature.

The relative size of the bidder compared to the deal size can also impact stock returns. Positive correlations have been found between relative size and the success of M&A deals, particularly for smaller acquirers. This suggests that acquirers should consider the relative size when evaluating potential acquisition targets.

Lastly, the legal status of the target company, whether publicly listed or privately held, can influence stock returns. Acquisitions of non-listed, private targets have been found to be more favorably received in the short-term, potentially due to less competition in the takeover market.

2. Methodology and data description

2.1. Methodology

2.1.1. Event study

Abovementioned researches have shown that reaction of the market is one of the most used approaches for M&A. Accounting measures are considered to be irrelevant because of their periodic nature as it is usually not possible to distinguish all the factors influencing accounting metrics. Expert metrics are considered to be subjective and also are not used in the study.

Hence, this part of the thesis examines how M&A announcements affect the share prices of acquirer. The classic event study methodology of Fama et al. (1969), according to which, excess returns for a share are calculated for a period of time and then checked for statistical significance.

The most common methods (MacKinlay, 1997) for investigating an event are the Market model (MM), Market-adjusted model (MAM), Capital Asset Pricing Model (CAPM), and Fama-French Three-factor model. In addition, Cumulative ARs (CARs, Fama et al., 1969), Buy-and-Hold ARs (Lyon et al., 1999), and Calendar Time ARs (Fama, 1998) are used to calculate current returns. As we are interested only in short-term effect, CARs have been chosen for calculations.

The most commonly used benchmark model in the field of short-term event studies is the Market Model by Brown and Warner (1985). This method assumes that the return on a share depends on that of a relevant index. The axis intercept (alpha) and the slope (beta) are calculated in an observation period using regression analysis. The advantage of this approach is that both market-wide factors and the risk of the respective stock are taken into account (Brown and Warner 1980, p. 213).

In contrast to Sharpe's (1963) single-index model, the market model assumes that the risk-free interest rate, which is included in alpha, remains constant. This could be a potential limitation of the market model. Since the market model is one of the one-factor models, it would also be possible for multi-factor models to arrive at better estimates of the expected returns. However, investigations have shown that multi-factor models are not preferable. They, too, cannot forecast the expected return any better than the relatively simple market model (Ahern 2009, p. 480). Hence, the following formula is used to calculate the expected return:

$$E(R)_{i,t} = \hat{\alpha}_i + \hat{\beta}_i \times R_{m,t} \quad \textbf{(1)}$$

E(R) i,t stands for the expected return of stock i on a given day t, α̂ for the intercept, β̂ for the slope of stock i and Rm,t for the continuous return of the relevant index m on day t. To estimate the parameters α̂ and β̂, a regression analysis is performed with the observation period of days -206 to -6 prior to announcement day of the takeover. Ri,t describes the steady return on stock i on day t, which results from the logarithm of dividing the stock price Ki,t on the same day by that of the previous day:

$$R_{i,t} = ln \frac{K_{i,t}}{K_{i,t-1}} \quad \textbf{(2)}$$

The expected return E(R)i,t is subtracted from the continuous return Ri,t of stock i on day t, giving the abnormal return (ARi,t) of stock i on day t:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i \times R_{m,t}) \quad \textbf{(3)}$$

In order to compare the consistency of results, another approach of market model is used. Rm,t is subtracted from the continuous return Ri,t of stock i on day t, giving the abnormal return (ARi,t) of stock i on day t:

$$AR_{i,t} = R_{i,t} - R_{m,t} \quad \textbf{(4)}$$

For day t, average abnormal returns (ARi,t) are then calculated across all events. These are called Average Abnormal Returns (ART) and are calculated as follows:

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t} \quad \textbf{(5)}$$

Where N is the sample size. Now the AARs for the individual days are accumulated at different intervals.

The calculations lead to the CAAR, where t1 is the first day and t2 is the last day in the interval:

$$CAAR_{t1;t2} = \sum_{t=t_1}^{t_2} AAR_t \quad \textbf{(6)}$$

The calculated CAARs are then checked for the null hypothesis. t-values are calculated using the Crude Dependence test by Brown and Warner (1980). First, the standard deviation is

determined in the observation period. T0 stands for the first day, T1 for the last day and M for the duration of the observation period:

$$S_{AAR} = \sqrt{\frac{1}{M-2} * \sum_{t=T_0}^{T_1} (AAR_t - \frac{1}{M} \sum_{t=T_0}^{T_1} AAR_t)^2} \quad (7)$$

and the associated t-value is then calculated:

$$t_{CAAR_{t_1,t_2}} = \frac{CAAR_{t_1,t_2}}{\sqrt{t_2 - t_1} * S_{AAR}} \quad (8)$$

For the study 3 short-term event windows were chosen to analyze response in pre-acquisition and post-acquisition announcement states:

1 trading day before and after the acquisition announcement [-1, 1];

2 trading days before and after the acquisition announcement [-2, 2];

5 trading days before and after the acquisition announcement [-5, 5];

In this case 0 is the day of the announcement.

2.1.2. Regression analysis

This study uses cross-sectional regression analysis to examine multiple hypotheses regarding the M&A announcement and participating firms. The regression of the abnormal returns is run on hypothesized characteristics to test H2 - H9. The calculated CARs (-1,+1; -2,+2; -5,+5) from the event study approach are selected as the dependent variable for M&A performance. Independent variables include payment method, deal size, market capitalization of the bidding firm, relative size, industry relatedness. Moreover, 2 interaction variables that will measure stock and cash cross-border deals (Dutta et al., 2013).

The Multiple linear regression (MLR) regression method is used, and Variance Inflation Factors (VIF values) are checked for collinearity. If collinearity is problematic, variables are reconstructed through factor analysis, assessed in separate regression models, or removed when similar variables are already added.

Independent variables consist of Cash payment method, Stock Payment method, Domestic or cross-border M&A, Deal size, Industry relatedness, Market capitalization of the

bidder, Relative size, Target listing status, Cash payment method * Cross dummy, and Stock payment method * Cross dummy.

The final regression model is shown below. The same regression model is applied across all event windows:

$$CAR = \beta 0 + \beta 1\ CashDum + \beta 2\ StockDum + \beta 3\ CrossDum + \beta 4\ RelDum + \beta 5\ LogDV + \beta 6\ MarCap + \beta 7\ RelSize + \beta 8\ Tlist + \beta 9\ CashDum * CrossDum + \beta 10\ StockDum * CrossDum + Year + Industry + \varepsilon$$

The definitions of all variables are the following:

- *CashDum:* CashDum is dummy variable that represent whether the transaction is a cash deal (1) or a stock/mixed deal (0).
- *StockDum:* StockDum is dummy variable that represent whether the transaction is a stock deal (1) or a cash/mixed deal (0).
- CrossDum*:* dummy variable that takes the value of 0 if the deal is cross-border and 1 if it is domestic.
- *RelDum:* dummy variable that takes the value 1 if the target company and the bidder are from the same industry based on their first two numbers of SIC code, and 0 otherwise.
- *LogDV:* the natural logarithm of the deal value, which captures the effect of the size of the transaction on CAR
- *MarCap:* is the market capitalization of the acquiring firm, which controls for its size
- *Relsize:* ratio of deal value to market capitalization, which controls for the relative size of the transaction.
- *Tlist*: dummy variable that represents whether the target company is listed (1) or not (0).
- CashDum * CrossDum: interaction dummy that captures the effect of cash payment method in the transaction and whether the deal is domestic or not, made by multiplication of CashDum and CrossDum.
- StockDum * CrossDum*:* interaction dummy that captures the effect of stock payment method in the transaction and whether the deal is domestic or not, made by multiplication of StockDum and CrossDum
- Year and Industry are control variables

Dummy were used in order to evaluate the impact of cross-border, payment method and target status effect. Dummy traps, perfect collinearity, are a avoided by using only one dummy variable for binary, 0 and 1, variable, that is in line with the rule that one less dummy variable should be included in the regression than there are options. (Gujarati & Porter, 2009).

2.2. Data sample

Data on mergers and acquisitions, including their corresponding announcement dates, was obtained from the Orbis M&A database. Information on stock prices and STOXX index returns was sourced from Capital IQ. The conditions were taken from similar studies (Mateev (2017), Brunner-Kirchmair et al. (2017), Martynova and Renneboog (2011))

A takeover had to meet the following conditions in order to be included in the sample:

1. *Only "Merger" and "Acquisition" were considered as forms of takeover.*

   This paper focuses only on acquisitions and mergers. Buybacks, recapitalizations, acquisition of assets are, therefore, excluded from the sample.

2. *The observation period for the takeover announcement must fall between January 1, 2010 and December 31, 2019.*

   In order to avoid crisis effects on the value creation, the range of dates includes only the period between the global financial crisis of 2008-2009 and the global pandemic that had a great impact on the financial markets. Furthermore, this period is new in terms of M&A research and is used to test if patterns discovered previously deviate significantly nowadays.

3. *Only Buyers from Western and Eastern Europe were chosen.*

4. *Acquiror must be a listed company*.

   Event studies implies using market-based metrics, therefore it is essential for the company to be publicly traded.

5. *The value of a deal must be higher than €100,000.*

   Small transactions tend not to influence company's stock price significantly, Therefore, only large bids are retained

6. *Only deals where 100% of the target was taken over with minimum acquired stake of 50% and these takeovers were successfully completed were taken into account.*

   The sample includes only completed transactions to minimize the potential impact of estimated probability of completion on the M&A value creation.

7. *Deals only with payment methods available.*
8. *The stock has to be traded on each of the 205 trading days before and 5 trading days after the announcement date to be considered.*

In order to calculate abnormal returns with reference to current methodology 200 days prior to the largest window should be taken to build OLS regression.

A robust model for merger evaluations was created with an initial sample size of 1470 mergers. However, the available market data was limited to 200 days before the largest windows, which reduced the sample size to 837 mergers. This step aimed to ensure that there was enough data for a meaningful analysis.

Next, companies with missing values for variables required for regression, such as acquiror market capitalization and deal value, were excluded. This resulted in a further reduction in the sample size, leaving a sample of 654 companies.

Additionally, any duplicated transactions of the same company in the sample that occurred within the range of 200 days between each other were replaced with the earlier occurrence to prevent any misleading expected returns. This step resulted in a sample size of 602 mergers. Finally, prices available at Capital IQ decreased the sample size to 512.

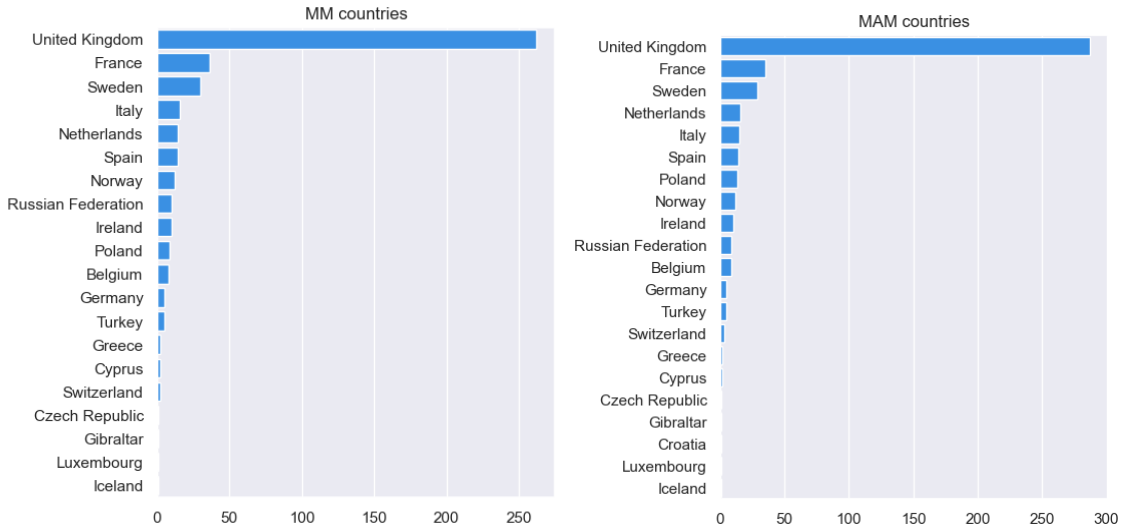
Overall, the selection process resulted in a final sample size of 512 mergers, which is considered robust enough to provide valuable insights into merger evaluations. However, it will be observed in further research that the finalized sample after removing outliers is 470 for market model and 504 for market-adjusted model.

STOXX-600, which contains the 600 largest European companies, was set as the reference index for shares for evaluation of normal returns as the regions of interest for the paper is Europe and the index encompassed almost all stock exchanges presented in the sample.

2.3. Description of the sample

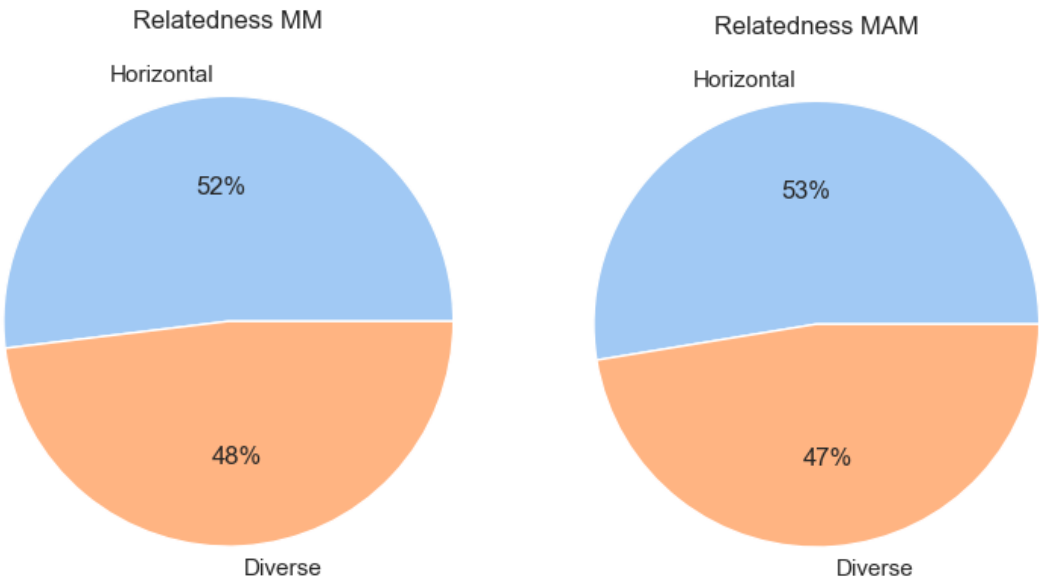
The section gives an overview of the data used. As there are 2 final samples for Market (MM) and Market adjusted models (MAM), it is worth to check if there are familiar enough for comparison.

Figure 2.1. Number of M&A deals in Europe by acquiror country across 2 models



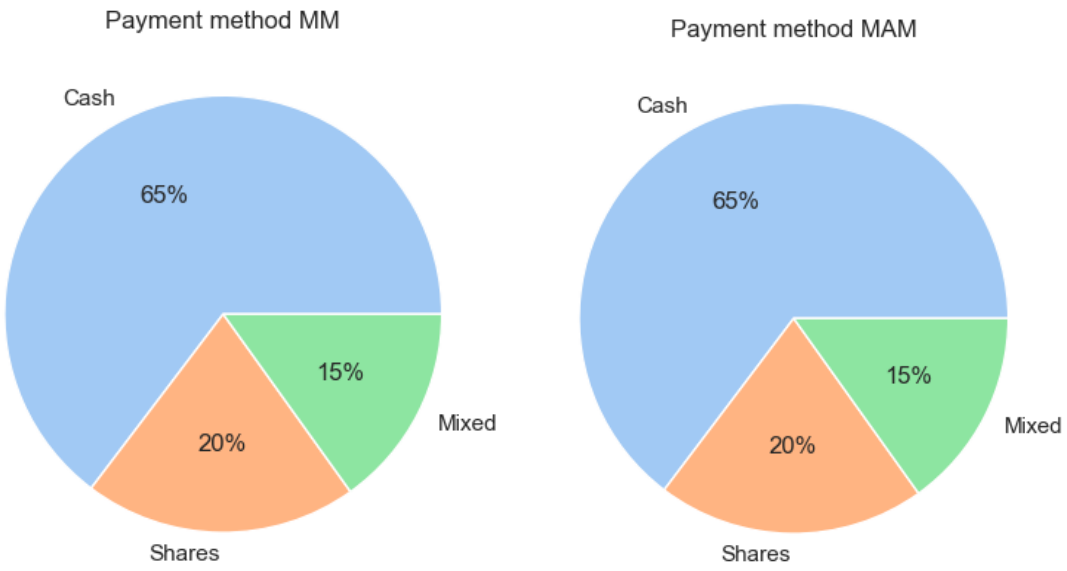
The figures show the number of M&A deals in Europe by acquiror country, more detailed statistics presented in Appendix Table 8 and Appendix Table 11. The UK has the highest number of deals with 262 (61%) and 287 (59%) for MM and MAM correspondingly, followed by France with 35 (7.43%) for MAM and 36 (8.16%) for MM, 29 (6.16%) for MAM and Sweden with 30 (6.80%) for MM, 14 (3.17%) for MM, the Netherlands 16 (3.40%) for MAM, and 16 (3.63%) for MM Italy with 15 (3.18%) for MAM. The remaining countries have a lower number of deals, with Iceland and Luxembourg having the lowest numbers in both models

Figure 2.2. Relatedness in samples pie chart across models



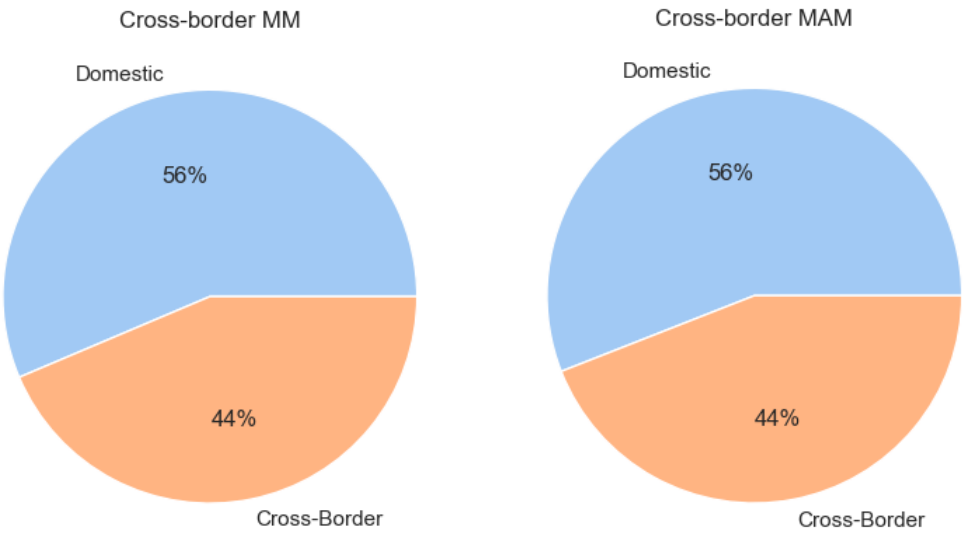
Relatedness is identified by first 2 numbers of SIC codes. If the first two numbers SIC code of acquiror company equal to the first two numbers SIC code of target one, such deal is counted as industry-related. In terms of relatedness the sample is balanced with small differences between 2 samples.

Figure 2.3. Payment method in samples pie chart across models



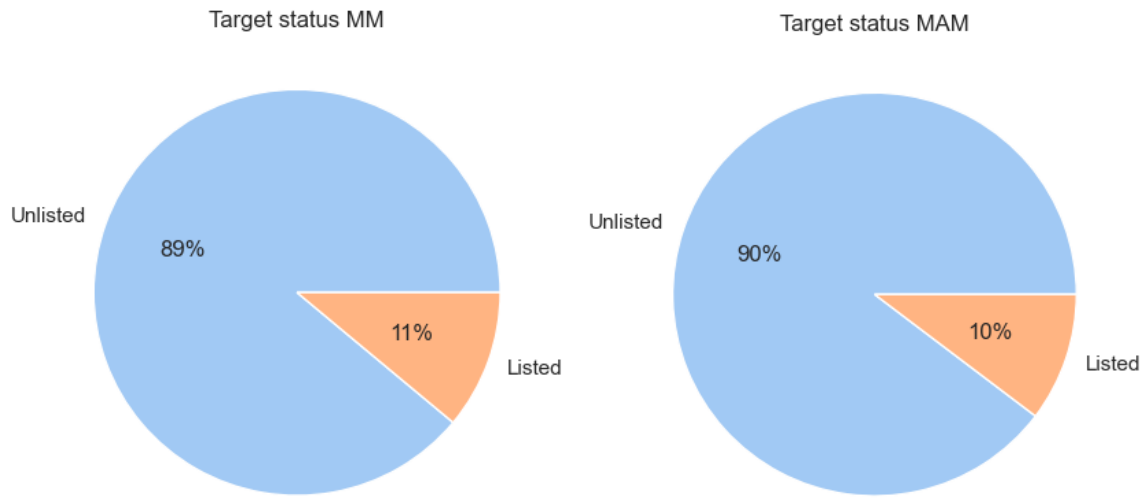
In terms of Payment methods Cash deals represent the majority of 306 for MM and 329 deals for MAM, that is 65% in both samples. Shares deals are 94 for MM and 10 for MAM, that is 20% in both samples. Mixed are 70 for MM and 77 for MAM, that is 15% in both samples.

Figure 2.4. Cross-border deals in samples pie chart across models



The deal is counted as domestic if places of incorporation of acquiror and target companies are the identical. In terms of cross-border deals the sample is balanced with small differences between 2 samples. Domestic outnumbers cross-border deals in both models.

Figure 2.5. Legal status of target in samples pie chart across models



The deals with unlisted targets outnumber listed companies, which is in line with data sets in previous research. The proportions are almost identical in both samples.

Thus, the sample is big enough and mostly balanced to proceed with regression model. Samples from two models are similar.

3. Results

The following descriptive statistics is calculated and presented in Appendix tables 9 and 10.

In the Market adjusted model table, Deal value has a mean of €351,763,300, and ranges from a minimum of €103,714 to a maximum of €21,439,860,000. The 25th percentile (or first quartile) is €8,140,649, the median (or 50th percentile) is €38,876,850, and the 75th percentile (or third quartile) is €195,914,000. Similarly, in the Market model table, Deal value has a mean of €388,307,400, a standard deviation of €1,476,830,000, and ranges from a minimum of €103,714 to a maximum of €21,439,860,000. The median is €54,673,580.

Market capitalization in both the Market adjusted model and Market model tables.
In the Market adjusted model table, MarCap has a mean of €19.95 mln and ranges from a minimum of €12.45 mln to a maximum of €25.60 mln. The median is €20.048 mln. Similarly, in the Market model table, MarCap has a mean of €20.09 mln and ranges from a minimum of €12.45 mln to a maximum of €25.60 mln.The median is €20.27 mln.

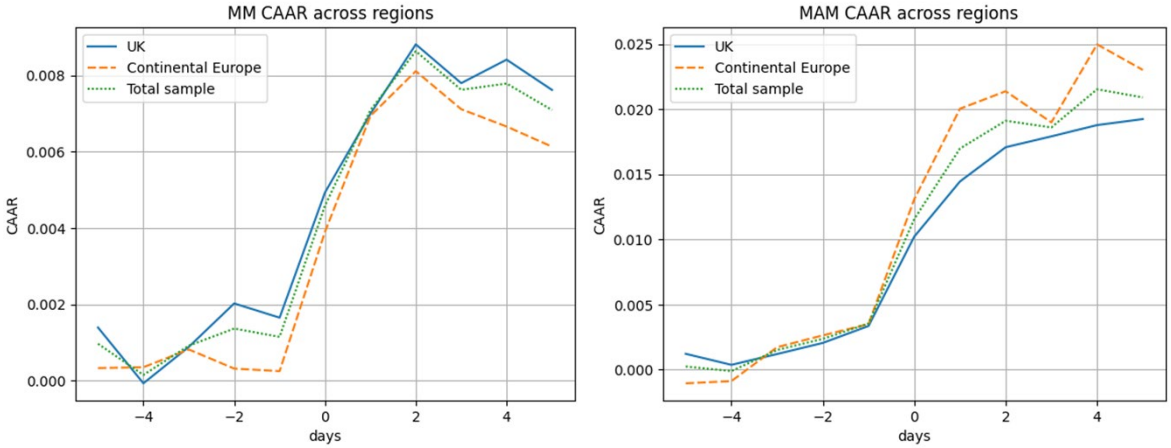
In the Market adjusted model table, Relative size has a mean of 0.747335, a standard deviation of 5.636547, and ranges from a minimum of 0.000148 to a maximum of 84.443407. The median is 0.085165. Similarly, in the Market model table, RelSize has a mean of 0.779740, a standard deviation of 5.832644, and ranges from a minimum of 0.000148 to a maximum of 84.443407. The median is 0.087762.

Logarithm of Deal value is hard to interpret, therefore it is not necessary to describe the statistics.

All correlation matrices for MM and MAM across different samples show similar patterns. It can be observed that CashCross (Domestic deals paid in cash) are moderately correlated with CashDum and CrossDum which is logical, given CashCross is the result of multiplication of two variables. There is also a low negative correlation with StockCross and StockDum which is logical for the same reasons. StockCross has the same pattern for the same reasons. It is not unusual that Market Capitalisation and LogDV are highly correlated as it can be concluded that bigger companies tend to have bigger deals. Moreover, low correlation occurs between legal status and deal value.

3.1. CAAR T-test results

Figure 3.1. CAAR for different samples across models



In the Figure 3.1 it can be observed that the patterns of CAAR are similar, however the CAARs using Market adjusted model are higher for all days except -4. The difference will be shown in detail and addressed later in the text. Moreover, CAARs in UK seems to be outperform in case of MM model. Thus, the overall results are ambiguous.

The question also arises as to why the excess returns on the announcement day are significantly higher for the MM than for the MAM, which is also reflected in lower.

It is generally expected that the Market Adjusted Model will lead to higher cumulative average abnormal returns than the Market Model because the Market Adjusted Model does not adjust for any additional factors that may be influencing the stock's returns. As a result, the Market Adjusted Model may capture more of the stock's idiosyncratic risks, which are not related to the overall market performance. In Holler's (2014) research, it was found that the Market Adjusted Model tends to produce higher CAAR because it is more simplistic in its assumptions, and therefore easier to apply. Additionally, the Market Adjusted Model tends to capture short-term market fluctuations more accurately, which can lead to higher returns in the short term.

In contrast, the Market Model seeks to eliminate any market-related factors that may be influencing the stock's returns, leaving only the stock-specific risks. Therefore, the Market Model may capture less of the stock's idiosyncratic risks, which could result in lower cumulative average abnormal returns than the Market Adjusted Model.

Table 3.1. CAAR T-stat results for MM and MAM model

Total sample MM t-stat results				Total sample MAM t-stat results			
Window	CAAR	t-stat	Positive ratio	Window	CAAR	t-stat	Positive ratio
-5 : 5	0.707%	1.59	48.4%	-5 : 5	2.093%	2.44**	58.2%
-2 : 2	0.757%	2.49**	52.5%	-2 : 2	1.758%	2.82***	62.3%
-1 : 1	0.575%	2.1*	54.1%	-1 : 1	1.466%	2.98***	61.4%
UK MM t-stat results				UK MAM M t-stat results			
-5 : 5	0.762%	1.64	48.8%	-5 : 5	1.924%	2.86***	57.5%
-2 : 2	0.792%	2.96***	52.2%	-2 : 2	1.588%	3.25***	60.9%
-1 : 1	0.497%	1.89*	53.6%	-1 : 1	1.239%	3.15***	57.5%
CE MM t-stat results				CE MAM t-stat results			
-5 : 5	0.611%	1.27	48.4%	-5 : 5	2.304%	1.87*	58.9%
-2 : 2	0.698%	1.81*	52.9%	-2 : 2	1.958%	2.37**	63.8%
-1 : 1	0.668%	2.26**	54.3%	-1 : 1	1.75%	2.74***	66.3%

The results of the market model (MM) for the total sample shows that, the 11-day window produced CAAR of 0.707% and a positive ratio of 48.4%, but the result is not highly statistically significant and less than half of the stocks had positive CAAR results. In contrast, the 5-day window produced a stronger CAAR of 0.757% and a higher positive returns ratio of 52.5%. The 3-day window significant only at the level of 10% and have lower returns comparing to other windows. However, higher ratio of positive returns.

The market adjusted model generally outperformed the market model in terms of CAAR, and positive ratio. The trend applies to all sample. For total sample the 11-day window produced a CAAR of 2.093% with a statistical significance at the level of 1% and a positive ratio of 58.2%, thus, over half of the stocks have positive CAR results.

The results of UK market model generally follow the trend of the total sample, with the 5-day window producing stronger results. The 5-day window produced a CAAR of 0.792% and a positive ratio of 52.2% with significant results at the level of 1%. The 3-day window shows the same pattern as in total sample, having the lowest CAAR and significance at the level of 10%

The results of the market adjusted model for the UK market outperformed the MM model for the UK market as well. All the CAARs are significant at the level of 1% and higher than MM results. The 11,5,3-day window produced CAARs of 1.924%, 1.588%, 1.239% correspondingly.

The results of the MM model for the CE market stands out of the general pattern and are generally weaker than the results for the UK market. The 5-day window produced a CAAR of 0.698% with statistical significance only at the level of 10%. The 3-day window produced a CAAR of 0.668% with statistical significance at the level of 5%

The results of the MAM model for the CE market generally outperformed the MM model for the CE market as well. However, significance for 11-day window is only at the level of 10%.

The statistical significance of the CAARs for total sample varied across the time windows, with the -2 to 2 and -1 to 1 windows showing statistically significant results at the 1% and 5% levels, respectively. These statistically significant results support the findings of (Martynova & Renneboog, 2011) that European bidders were able to generate positive abnormal returns during these time windows. However, it contradicts the same paper in terms of results of -5 to 5 window as it was stated that this window also has positive significant results, while this is not the case here. Moreover, it also contradicts (Mateev & Andonov, 2018), who did not find significant impact of M&A on stocks of European bidders in windows from -1 to 1 and -5 to 5.

The positive ratio also indicates that the majority of European bidders experienced positive abnormal returns during the time windows, with the highest positive ratio of 54.3% and 66.3% for MM and MAM correspondingly observed in the -1 to 1 window.

Overall, it can be observed that 11-day window generally is not significant in MM model. Thus, to produce reliable results and comparison only 3 and 5 -day windows are taken into account for further research.

3.2. Multiple regressions results

It is worth to mention that according to correlation matrices there are some logical correlations, for instance, between CashDum and CashCross, therefore they also are checked for multicollinearity.

The initial model with all variables (Model 0 in Appendix Table 4, 6) includes the problem of multicollinenarity. It is logical that there will be multicollinearity among LogDV with MarCap, CASHCROSS with CrossDum and CashDum, StockCross with StockDum and CrossDum. After the analysis 5 models were chosen that eliminate the multicollinearity problem. VIF are then

checked and it was concluded thal all VIFs are lower than 5, which is a sign of absence of multicollinearity (James G et al., 2017, Menard S, 2001)

The following tables present the further structure. All tables are divided by the several criteria. The order of grouping is the following: the size of event window (5 or 3 days), the region (Total sample, The United Kingdom (UK), Continental Europe (CE)), the model chosen (Market model (MM), Market-adjusted model (MAM)).

The difference in samples for MM and MAM window is due to eliminating outlying AARs. The number of outliers in MAM model. Thus, MM and MAM windows have 470 and 504 of total observations correspondingly.

3.2.1. Results for MM and MAM models for 5-day window

According to the results of the MM CAR 5-day window Total sample Regression (Appendix table 18), it can be stated that domestic deals have small but significant impact on cumulative abnormal returns. Moreover, interaction variables CASHCROSS and STOCKCROSS are also significant in Model 4 and Model 1, Model 3, Model 4, Model 5, correspondingly, meaning that cash and stock deals are positively correlated with cumulative abnormal returns when domestic target is acquired. Thus, M&A deals that involve cash transactions and domestic transactions are more likely to result in higher CARs.

In addition, the regression results show that the CrossDum variable has a positive coefficient in Model 1 and 2, suggesting that M&A deals that involve cross-industry acquisitions are more likely to have higher CARs than those that do not. RelDum also has a positive coefficient in all five models indicating that M&A deals between companies in the same industry are more likely to result in higher CARs, although, in 4 models significance is only on the level of 10%.

The LogDV variable has a negative coefficient in Model 3, however, the result is insignificant. The MarCap variable has a negative coefficient of (-0.001%) in Model 1 and 2, indicating that larger bidder companies are less likely to have higher CARs. RelSize has a positive coefficient in Models 3, 4, and 5, however, the results are insignificant. Tlist variable is significant across all models with average of (-0.01024%), indicating that acquisition of listed company is negatively correlated with CARs.

The R-squared values range from 0.128 to 0.175, indicating that the model explains between 12.8% and 17.5% of the variance in the CAR. The F-statistic values are all statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

The results of MAM CAR 5-day window Total sample Regression (Appendix Table 19) show that the STOCKCROSS variable has an average coefficient of 0.0171 and is significant at the 5% level across all models, indicating that domestic stock deals are positively correlated with CAR.

Moreover, 4 out of five models shows significance. The R-squared values range from 0.128 to 0.175, indicating that the model explains between 12.8% and 17.5% of the variance in the CAR. The F-statistic values are all statistically significant at the 1% level, indicating that the model as a whole is significant. These findings suggest that the regression model is reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

Tlist variable is significant across all models indicating that acquisition of listed company is negatively correlated with CARs.

Overall, the results suggest that stock stocks and cross-listed stocks may have a slightly positive effect on CAR, while buying listed targets have a slightly negative effect on CAR. The other variables are generally not significant in explaining CAR.

According to the results of the model MM CAR 5-day window UK Regression (Appendix Table 20) Cash deals do not have a significant impact on cumulative abnormal returns for cross-border deals neither while it is cross-border deal or not. However, the interaction variables CASHCROSS and STOCKCROSS are both insignificant in Model 4 and Model 5, meaning that cash and stock deals do not impact CAR across firms from UK. Cross border have significance only at 10% level, thus small positive impact is considered to be insignificant.

The negative coefficient for the MarCap variable in Models 1 and 2 is in line with the results of the whole sample. However, coefficients are not significant in this case.

The regression results also show that the CrossDum variable has a positive coefficient in Model 1 and 2 but only at 10% level. RelDum also has a positive coefficient in all five models, indicating that M&A deals between companies in the same industry are more likely to result in higher CARs.

The LogDV variable has a negative coefficient in Model 3 and 4, however, the result is insignificant. The RelSize variable has a positive coefficient in Models 3, 4, and 5, however, the results are insignificant.

Tlist variable is significant in 3 models at the level of 5% and at the level of 10% in others, indicating that acquisition of listed company is negatively correlated with CARs.

All models show significance. The R-squared values range from 0.189 to 0.204, indicating that the model explains between 18.9% and 20.4% of the variance in the CAR. The F-statistic values are all statistically significant at the 1% level, indicating that the model as a whole is

significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

The model for MAM CAR 5-day window UK Regression (Appendix Table 21) has not shown significant results. All models are bad for interpretation and there is no significant factors correlating with CAR in UK.

According to the results of the model MM CAR 5-day window CE Regression STOCKCROSS is consistently statistically significant at the level of 1% across all models with average coefficient of 0.0233. Moreover, MarCap demonstrates small but significant negative coefficient at the level of 5%, meaning that smaller acquirors tend to have lower CAR after M&A deal. Tlist shows significance in all models. However, only 2 of them are significant at the level of 5%.

Other variables such as CASHCROSS, RelDum, LogDV, RelSize are statistically insignificant in all models.

All models show significance. The R-squared values range from 0.233 to 0.301, indicating that the model explains between 23.3% and 30.1% of the variance in the CAR. The F-statistic values are all statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

According to the results of MAM CAR 5 day window CE Regression Tlist (Appendix Table 23) shows significance in all models, showing comparatively strong negative impact on CAR with the average of -0.0202.

Other variables such as CASHCROSS, RelDum, LogDV, RelSize are statistically insignificant in all models. STOCKCROSS shows significance only in one model but only at the level of 10%.

The R-squared values range from 0.183 to 0.218, indicating that the model explains between 18.3% and 21.8% of the variance in the CAR. Models are all but one which is significant at level of 5% statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns. Therefore, we can summarize the results of 5-day analysis in the table Table 3.2.

Table 3.2. Summary of the results of 5-day analysis

	MM TS 5	MAM TS 5	MM UK 5	MAM UK 5	MM CE 5	MAM CE 5
CASHCROSS	+					
STOCKCROSS	+	+			+	
CashDum						
StockDum						
CrossDum	+					
RelDum			+			
LogDV						
MarCap	+				+	
RelSize						
Tlist	+	+	+		+	+

From the table it can be observed that in the Total sample the only variables that consistently significant are STOCKCROSS and Tlist, meaning that when deals are made in stocks and the company acquired is not foreign one or when a company buys a not-listed company it will more likely have higher CAR for 5 days. However, according to MM model, Cash deals made domestically correlate with higher CARs. Same applies to MarCap and CrossDum, meaning that bigger acquirers tend to have smaller CARs and domestic deals have higher CARs.

Since MAM models for UK failed to produce any significant results, for UK there is no consistent results across models. However, according to MM model, acquirers that buy the company in other industry or listed company will likely have lower CAR.

The only significant and consistent variable in the model in CE is Tlist, meaning that deals with acquisition of listed company with higher chance have CAR lower for 5 days window. However, according to MM model, CE have the same effect of MarCap and STOCKCROSS on CAR as in Total sample.

3.2.2. Results for MM and MAM models for 3-day window

According to the results of MM CAR 3-day window Total sample Regression, it can be stated that domestic deals have small but significant impact on cumulative abnormal returns. Moreover, interaction variables CASHCROSS and STOCKCROSS are also significant in Model 5 and Model 1, Model 3, Model 4, Model 5, correspondingly, meaning that cash and stock deals

are positively correlated with cumulative abnormal returns when domestic targer is acquired. Thus, M&A deals that involve cash transactions and domestic transactions are more likely to result in higher CARs.

At the same time in general Cash deals have lower CARs that can be observed from the model 5. In addition, the regression results show that the CrossDum variable has a positive coefficient in Model 1 and 2, suggesting that M&A deals that involve cross-industry acquisitions are more likely to have higher CARs than those that do not. RelDum is not significant across all models.

The LogDV variable has a negative coefficient in Model 3, however, the result is insignificant. The MarCap variable has a negative coefficient of (-0.001%) in Model 1 and 2, indicating that larger bidder companies are less likely to have higher CARs. RelSize has a positive coefficient in Models 3, 4, and 5, however, the results are insignificant. Tlist variable is significant across all models with average of (-0.00802%), indicating that acquisition of listed company is negatively correlated with CARs.

The R-squared values range from 0.151 to 0.185, indicating that the model explains between 15.1% and 18.5% of the variance in the CAR. The F-statistic values are all statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

According to the results of MAM CAR 3-day window Total sample Regression results, among the variables, STOCKCROSS appears to be significant in all five models. The variable has a positive coefficient estimate that is statistically significant at a level of 1% or lower, indicating that domestic deals made in stocks are associated with higher CARs of the buyer.

Tlist is also significant in all five models, with a negative coefficient estimate that is statistically significant at a level of 1% or lower.

The models are all statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression models appear to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

According to the results of MM CAR 3-day window UK Regression, for 3-day window all variables except CashDum and Tlist are insignificant. In Model 5, CashDum variable is statistically significant ($p < 0.05$) and has a negative coefficient of -0.0112, indicating that M&A deals in cash tend to have lower CAR for acquiror. Moreover, Tlist is statistically significant at a 5% level in 2 models and at a 10% in others, meaning acquisition of listed target will likely be associated with lower 3-day CARs for the buyer in UK.

The model explains between 22.4% and 24.7% of the variance in the CAR. The F-statistic values are all statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression models appear to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

MAM CAR 3-day window UK Regression has not shown significant results as the same model for UK for 5-day window. All models are bad for interpretation and there is no significant factors correlating with CAR in UK.

According to the results of MM CAAR 3-day window CE Regression, STOCKCROSS and CASHCROSS are consistently statistically significant at the level of 1% across all models with average coefficient of 0.0243 and 0.083 correspondingly. Moreover, MarCap demonstrates small but significant negative coefficient at the levels of 5% and 1%, meaning that smaller acquirors tend to have lower CAR after M&A deal. Tlist shows no significance in all models.

In addition, the regression results show that the CrossDum variable has a positive coefficient in Model 1 and 2, suggesting that M&A deals that involve cross-industry acquisitions are more likely to have higher CARs than those that do not.

Other variables such as RelDum, LogDV, RelSize are statistically insignificant in all models.

The R-squared values range from 0.233 to 0.301, indicating that the model explains between 23.3% and 30.1% of the variance in the CAR. The models are all statistically significant at the 1% level, indicating that the model as a whole is significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns.

According to the results of MAM CAAR 3-day window CE Regression results, STOCKCROSS is consistently statistically significant at the level of 1% across all models with average coefficient of 0.0247. Tlist also shows significance in all models, showing comparatively strong negative impact on CAR with the average of -0.0196. Other variables such as CASHCROSS, RelDum, MarCap LogDV, RelSize are statistically insignificant in all models.

The R-squared values range from 0.199 to 0.238, indicating that the model explains between 19.9% and 23.8% of the variance in the CAR. Models are all significant at level of 1%, indicating that the model as a whole is significant. Overall, the regression model appears to be reliable in explaining some of the factors that impact the success of M&A deals in terms of cumulative abnormal returns. Therefore, we can summarize the significant results of 3-day analysis in the Table 3.3.

Table 3.3. Summary of the results of 3-day analysis

	MM TS 3	MAM TS 3	MM UK 3	MAM UK 3	MM CE 3	MAM CE 3
CASHCROSS	+				+	
STOCKCROSS	+	+			+	+
CashDum	+		+			
StockDum						
CrossDum	+				+	
RelDum						
LogDV						
MarCap	+				+	
RelSize						
Tlist	+	+	+			+

From the table it can observed that in Total sample the only variables that consistently significant are STOCKCROSS and Tlist, like in 5 days analysis, meaning that when deals are made in stocks and the company acquired is domestic or when company buys not-listed company it will more likely have higher CAR for 5 days. However, according to MM model, CASH deals made domestically correlate with higher CARs. Same applies to CrossDum, domestic deals have higher CARs for the acquiror. MarCap is also significant, meaning that bigger acquirers tend to have smaller CARs for total sample.

Since MAM models for UK failed to produce any significant results, for UK there is no consistent results across models. However, according to MM model, acquirers that buy listed company or acquire companies using cash will likely have lower CAR.

The only significant and consistent variable in the model in CE is STOCKCROSS, meaning that domestic deals made in stocks are associated with higher 3-day CARs of the buyer. However, according to MM model, CE have the same effect of CrossDum, CASHCROSS, and MarCap on CAR as in Total sample.

The market model of this study reliably for 3-day and 5-day windows for total sample shows that there is positive correlation between returns and domestic deals. The higher returns for domestic deals are in line with the studies of from the early's 2000, which usually stated that domestic deals are associated with higher returns. (Aw & Chatterjee, 2004; Conn et al., 2005;

Eckbo & Thorburn, 2000; Martynova & Renneboog, 2008; Moeller & Schlingemann, 2005). However, it contradicts more recent papers that state the cross-border deals are associated with higher returns. (Danbolt & Maciver, 2012; Dutta et al., 2013; Gregory & O'Donohoe, 2014).

In contrast to the paper of Golubov et al. (2016), payment method according to the results has significant impact on returns. Moreover, Martynova and Renneboog (2011) studying the European market, found positive yet insignificant effect of stock deals on returns, stating that only cash-all deals lead to positive returns. The findings of this work, however, have shown that stock deals are associated with positive returns when are done domestically. Nevertheless, most of the works stated that there is only negative correlation between stock deals and returns of the bidder (Travlos, 1987; Wansley, Lane, & Yang, 1987; Amihud et al., 1990, and Brown & Ryngaert, 1991).

It is also worth mentioning that the negative correlation between legal status of the firm and returns was found that makes the acquisition of non-listed companies more valuable. These findings are in line with the work of Mateev (2017, p. 202) who also found in the 3-day CAAR that non-listed targets create move value for the company in Europe and Rani et al.(2015).

Practical implications and limitations

From a practical implications point of view the research provides decision-makers, including investors, executives, and other stakeholders, with valuable insights into the potential short-term impact of M&A deals.

By analyzing the short-term impact of M&A deals, the research could identify the factors that contribute to their success or failure. This understanding could be used to guide future M&A decisions, such as selecting the right target company, negotiating favorable deal terms, and managing post-merger integration. Furthermore, the research can increase awareness among companies, investors, and other stakeholders of the potential risks and benefits of M&A deals. This awareness could help them to better assess the potential impact of such deals on their financial performance and make more informed decisions about pursuing or avoiding them. This information could be used to develop more effective strategies for growth and expansion, including potential M&A activities. Thus, it would be a useful tool for potential predictions of value created as the result of M&A for financial managers in companies across Europe as the ultimate goal of the businesses is to create value for the investors.

In particular, investors and traders in Europe should take note of the positive association between domestic deals paid with stocks and higher Cumulative Abnormal Returns (CARs). This implies that when companies within the same country engage in transactions using stock as payment, it can potentially lead to favorable stock performance. Investors may consider analyzing such deals and evaluate their potential impact on stock prices, which could present investment opportunities.

For investors and traders focusing on Continental Europe, it is important to recognize that the positive association between domestic deals paid with stocks and CARs is specifically applicable to a 3-day window. This suggests that the impact of such deals on stock performance might be more immediate and short-lived. Traders could potentially exploit these short-term price movements for profitable trading strategies within this specific time frame.

Moreover, when a company acquires a target that is already listed on the stock market, it tends to be associated with lower CARs for both 3-day and 5-day windows. This implies that investors and traders should approach such acquisitions with caution, as they may result in negative effects on the acquiring company's stock performance within these time frames. It is crucial to thoroughly analyze the potential risks and uncertainties surrounding listed target acquisitions before making investment decisions.

Similar to the previous point, the negative association between acquiring listed targets and CARs applies specifically to a 5-day window in Continental Europe. Traders and investors should be aware of this time frame and consider adjusting their trading strategies accordingly. It may be prudent to closely monitor the stock performance of acquiring companies during this period and implement risk management measures to mitigate potential losses.

However, it should be mentioned that the research is limited to the European market, and effects in different regions can deviate. In addition, the research is conducted on the sample that does not include crises.

Conclusion

In conclusion, this study aimed to examine the extent to which mergers and acquisitions (M&A) impact the short-term financial performance of acquirers in Europe. By utilizing event study methodology and analyzing M&A announcements in European and UK markets over the past decade, the study has made significant contributions to the existing literature and provided valuable insights for stakeholders involved in M&A.

The findings of the study indicate that M&A deals have a discernible impact on the short-term financial performance of acquirers. Through the analysis of cumulative abnormal returns, the study isolated the effects of M&A events on stock prices, thus providing a clear understanding of the market's reaction to these deals. This approach allowed for the identification of key factors that influence the financial performance of companies involved in M&A transactions in Europe.

The study answers the research question stating that mergers and acquisitions have yet small but significant positive short-term impact on financial performance. Moreover, such factors as cross-border status of the deal, legal status of the target, and payment methods have significant impact on short-term returns in the European market. In particular, it has been found that there is a positive correlation between returns and domestic deals when it is paid in stocks for Continental Europe and the European market in general. Moreover, results have demonstrated the negative correlation between legal status of the firm and returns of the bidder, which proves the significance of such factors as legal status of the target, cross-border type of deal and the method of payment for short-term financial performance of the bidder.

For companies planning to engage in M&A activity, the study's findings offer valuable guidance in making informed decisions. By identifying the factors that positively or negatively impact short-term financial performance, companies can better structure their deals to maximize benefits and mitigate risks. This insight is particularly important for both developed and emerging markets in Europe, as these regions have been relatively underexplored in prior research.

In summary, this study contributes to the existing body of knowledge on M&A in Europe by focusing on short-term financial performance and utilizing event study methodology. The findings have practical implications for companies, investors, and regulators, assisting them in making informed decisions, identifying investment opportunities. By shedding light on the impact of M&A on acquirers' financial performance, this study adds

to the understanding of the dynamics of M&A transactions in Europe and their implications for stakeholders in the market.

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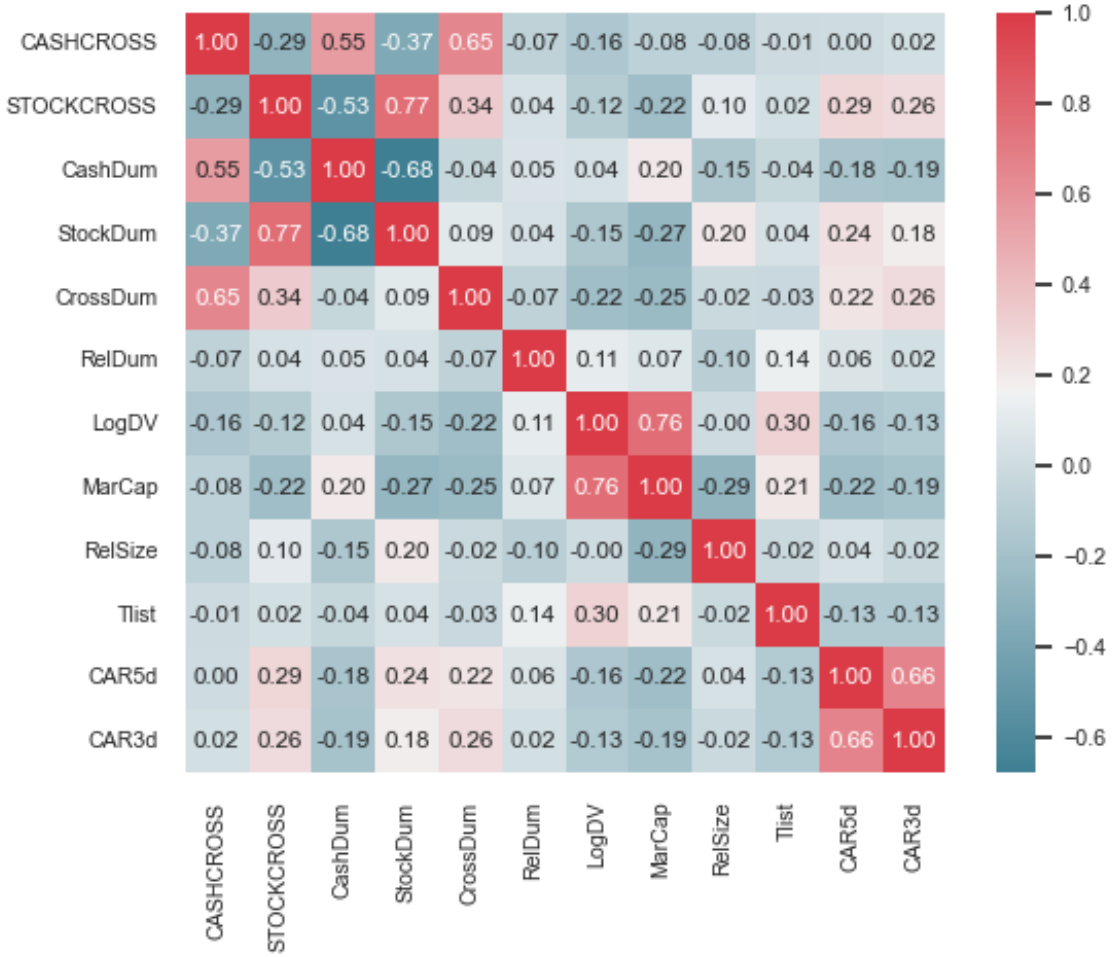
Appendix

Appendix Table 1. Literature review on European papers

Author	Region	Time period	Sample	E(R) - Model	CAAR - acquirer	Window
Mager and Meyer-Fackler (2017)	Germany	1981-2010	338	Carhart-Model	0,60% 1,70%**	[-1;+1] [-5;+5]
Brunner-Kirchmain et al. (2017)	Austria	1998-2010	100	Index-model	0,18% 0,91%	[-1;+1] [-5;+5]
Goergen and Renneboog (2004)	Europe	1993-2000	276	Market-Model	0,70%*** 1,18%***	[-1;0] [-2;+2]
Craninckx and Huyghebaert (2011)	Europe	1997-2006	603	Market-Model	0,50% 0,16% 0,48% 0,59%*** 0,78%*** 1,13%***	[-1;0] [-1;+1] [-5;+1] [-1;0] [-1;+1] [-5;+1]

Martynova and Renneboog (2011)	Europe	1993-2001	2419	Market-Model	0,53%*** 0,72%*** 0,39%	[0] [-1;+1] [-5;+5]
Campa and Hernando (2004)	Europe	1998-2000	262	CAPM	0,44%	[-1;+1]
Karamanus et al. (2015)	Greece	1996-2013	16	Market-Model	-0,78% -0,88% 1,88%	[0] [-1;+1] [-5;0]
Spyrou et al. (2011)	UK	1997-2006	3875	Index-model	0,04% 0,33% 0,08% 0,52% 0,20% 0,18% 0,23% 0,63%	[0] [0] [-1;+1] [-1;+1] [-5;0] [-5;0] [0;+5] [0;+5]
Mateev (2017)	UK and Continental Europe	2002-2010	2823	Market-Model	0,87%*** 1,12%*** 0,71%*** 1,06%***	[-1;+1] [-2;+2] [-1;0] [-2;+1]

Appendix Table 2. Correlation matrix for Total sample MM

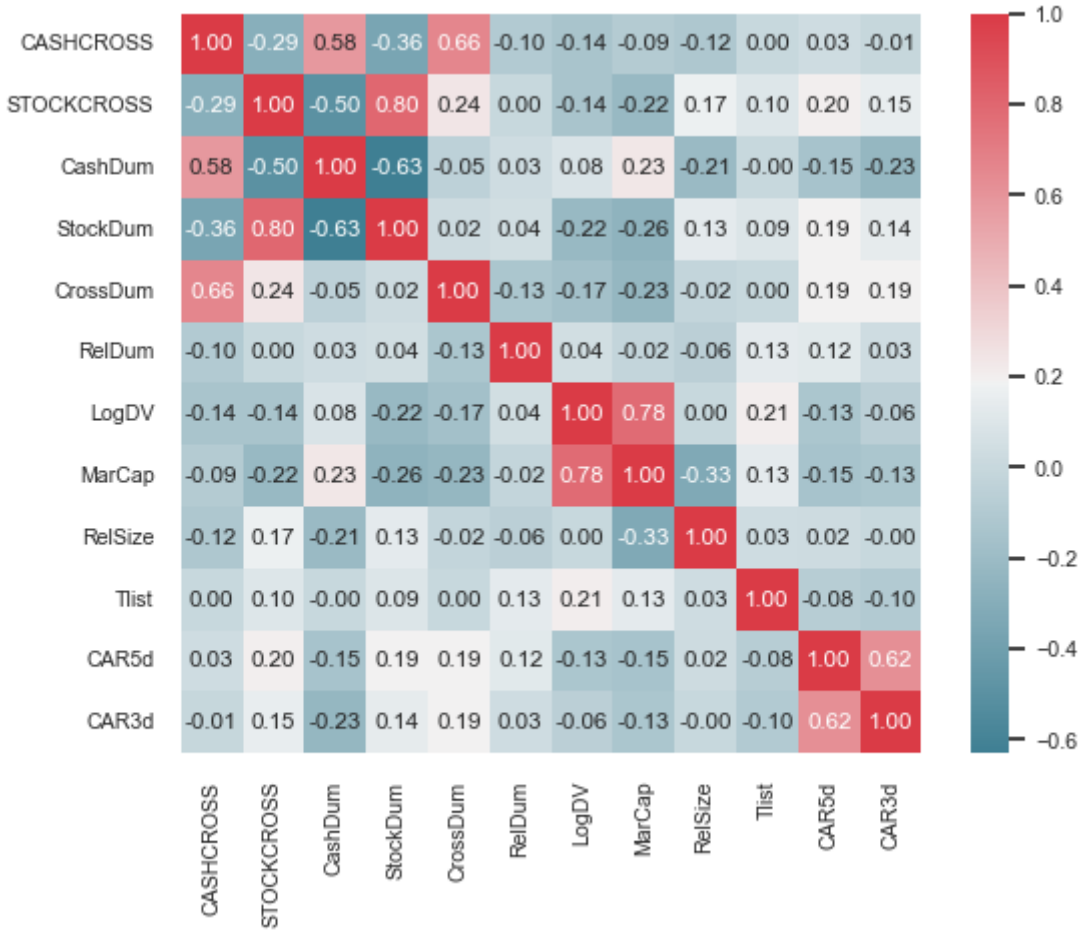


Appendix Table 3. Test for multicollinearity of the variables across models for total sample MM

VIF	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	11.599	---	---	---	1.684627	2.248002
STOCKCROSS	6.153	3.531009	---	2.904693	2.904695	2.904674
CashDum	10.567	---	---	---	---	3.147621
StockDum	5.129	3.464879	---	3.245909	3.398181	3.299054
CrossDum	13.801	2.628271	2.117201	---	---	---
RelDum	2.224	2.139958	2.121979	2.15653	2.157991	2.020759

VIF	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
LogDV	179.742	---	---	2.376409	3.272393	---
MarCap	185.401	3.644065	3.368613	---	---	---
RelSize	1.299	1.076053	1.013777	1.083833	1.083901	1.078847
Tlist	1.236	1.161619	1.159512	1.167537	1.167653	1.139566

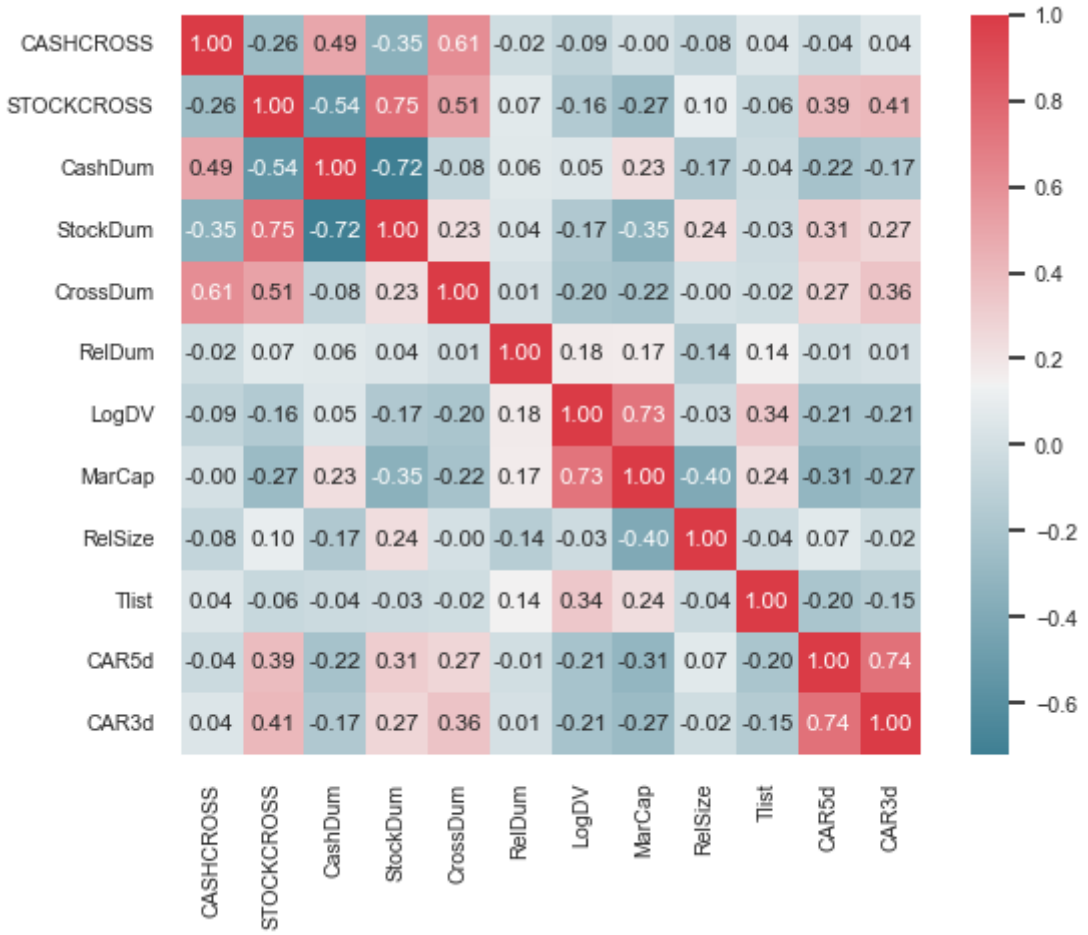
Appendix Table 4. Correlation matrix for UK MM



Appendix Table 5. Test for multicollinearity of the variables across models for UK MM

VIF	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	17.297846	---	---	---	1.951177	2.779542
CashDum	18.556146	---	---	---	---	3.835625
CrossDum	18.964935	3.029212	2.634206	---	---	---
LogDV	242.198808	---	---	2.286615	3.523212	---
MarCap	250.733298	4.230625	3.968265	---	---	---
RelDum	2.209928	2.103242	2.091104	2.118672	2.127371	1.966887
RelSize	1.438749	1.104809	1.068469	1.124824	1.131005	1.085946
STOCKCROSS	6.051431	3.591539	---	3.141585	3.141631	3.141979
StockDum	5.601181	3.453833	---	3.239661	3.357301	3.321386
Tlist	1.166870	1.120237	1.109162	1.122753	1.123504	1.119713

Appendix Table 6. Correlation matrix for CE MM



Appendix Table 7. Test for multicollinearity of the variables across models for UK MM

VIF	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	10.015384	---	---	---	1.437997	1.741381
CashDum	6.642783	---	---	---	---	2.480757
CrossDum	15.281687	2.548453	1.737206	---	---	---
LogDV	164.734466	---	---	2.620338	3.188364	---
MarCap	163.765060	3.240404	2.966616	---	---	---
RelDum	2.295965	2.221275	2.189584	2.239524	2.239594	2.123718

RelSize	1.466722	1.121714	1.024888	1.133391	1.133464	1.12918
STOCKCROSS	8.797502	3.841246	---	2.822648	2.822789	2.82243
StockDum	4.985849	3.499545	---	3.325783	3.484993	3.324794
Tlist	1.327573	1.233053	1.227231	1.246798	1.247036	1.189402

Appendix Table 8. Composition of MAM sample

Country	Percent	Count	Country	Percent	Count
United Kingdom	60.93	287	United Kingdom	59.41	262
France	7.43	35	France	8.16	36
Sweden	6.16	29	Sweden	6.80	30
Netherlands	3.40	16	Italy	3.63	16
Italy	3.18	15	Netherlands	3.17	14
Spain	2.97	14	Spain	3.17	14
Poland	2.76	13	Norway	2.72	12
Norway	2.55	12	Russian Federation	2.27	10
Ireland	2.12	10	Ireland	2.27	10
Russian Federation	1.91	9	Poland	2.04	9
Belgium	1.91	9	Belgium	1.81	8
Germany	1.06	5	Germany	1.13	5
Turkey	1.06	5	Turkey	1.13	5
Switzerland	0.64	3	Greece	0.45	2
Greece	0.42	2	Cyprus	0.45	2
Cyprus	0.42	2	Switzerland	0.45	2

Czech Republic	0.21	1	Czech Republic	0.23	1
Gibraltar	0.21	1	Gibraltar	0.23	1
Croatia	0.21	1	Luxembourg	0.23	1
Luxembourg	0.21	1			
Iceland	0.21	1			

Appendix Table 9. Variable description of MAM equation

	deal_value	LogDV	MarCap	RelSize
count	5.040000e+02	504.000000	504.000000	504.000000
mean	3.517633e+08	17.487122	19.951155	0.747335
std	1.400815e+09	2.240596	2.430965	5.636547
min	1.037141e+05	11.549394	12.459486	0.000148
25%	8.140649e+06	15.912375	18.322102	0.032752
50%	3.887685e+07	17.475799	20.048790	0.085165
75%	1.959140e+08	19.092967	21.658799	0.212167
max	2.143986e+10	23.788518	25.603485	84.443407

Appendix Table 10. Variable description of MM equation

	deal_value	LogDV	MarCap	RelSize
count	4.700000e+02	470.000000	470.000000	470.000000
mean	3.883074e+08	17.612279	20.095924	0.779740
std	1.476830e+09	2.246392	2.419542	5.832644
min	1.037141e+05	11.549394	12.459486	0.000148

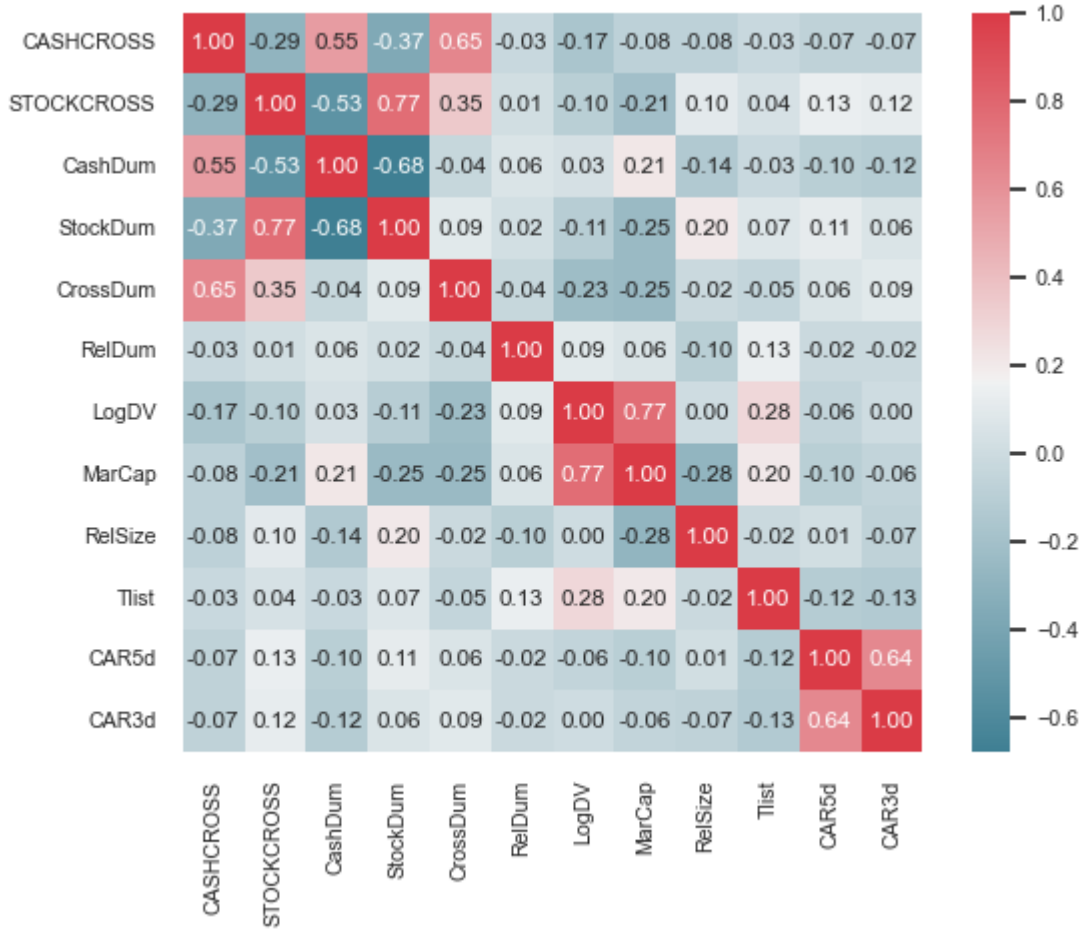
25%	8.803068e+06	15.990609	18.549529	0.031886
50%	5.467358e+07	17.816597	20.271017	0.087762
75%	2.219985e+08	19.218178	21.746771	0.211869
max	2.143986e+10	23.788518	25.603485	84.443407

Appendix Table 11. Composition of MM sample

Country	Percent	Count
United Kingdom	59.41	262
France	8.16	36
Sweden	6.80	30
Italy	3.63	16
Netherlands	3.17	14
Spain	3.17	14
Norway	2.72	12
Russian Federation	2.27	10
Ireland	2.27	10
Poland	2.04	9
Belgium	1.81	8
Germany	1.13	5
Turkey	1.13	5
Greece	0.45	2
Cyprus	0.45	2
Switzerland	0.45	2
Czech Republic	0.23	1
Gibraltar	0.23	1
Luxembourg	0.23	1

Iceland	0.23	1

Appendix Table 12. Correlation matrix for Total sample MAM

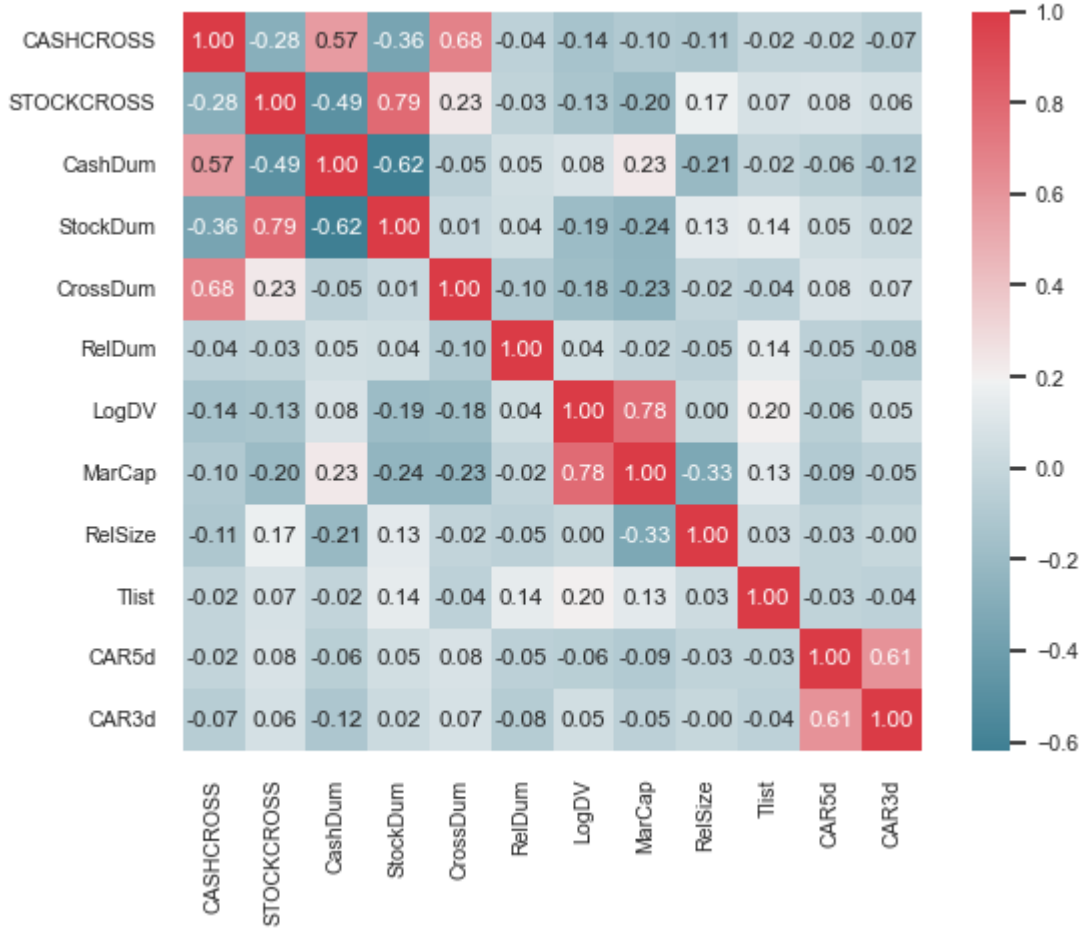


Appendix Table 13. Test for multicollinearity of the variables across models for Total sample MAM

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	11.355	---	---	---	1.673215	2.20567
STOCKCROSS	6.169	3.516247	---	2.882186	2.882189	2.882116
CashDum	10.366	---	---	---	---	3.066831
StockDum	5.135	3.448507	---	3.229148	3.385523	3.286139
CrossDum	13.654	2.615985	2.098888	---	---	---

RelDum	2.215	2.142893	2.134908	2.164694	2.165252	2.000259
LogDV	182.053	---	---	2.408912	3.225368	---
MarCap	188.602	3.579374	3.316741	---	---	---
RelSize	1.284	1.071903	1.013722	1.079175	1.079207	1.074472
Tlist	1.207	1.156599	1.149579	1.156711	1.157563	1.135461

Appendix Table 14. Correlation matrix for UK MAM

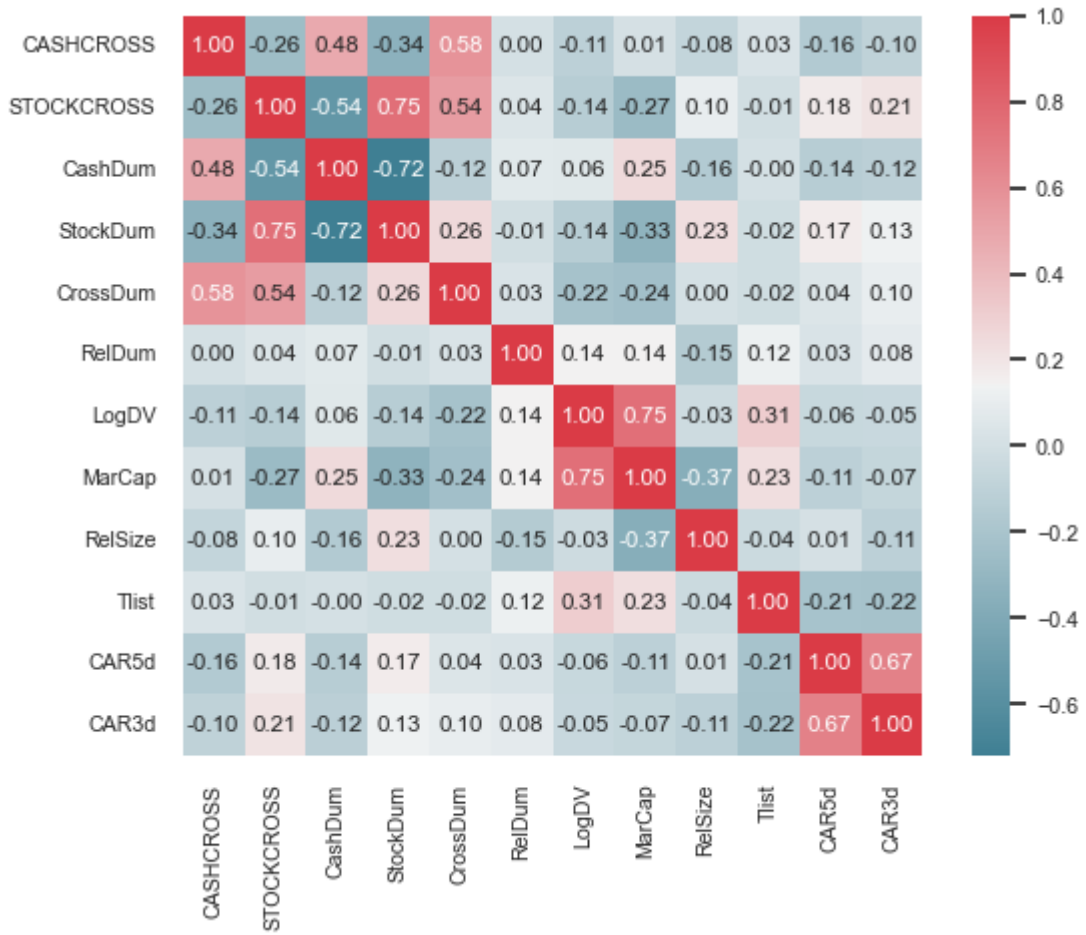


Appendix Table 15. Test for multicollinearity of the variables across models for UK MAM

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	17.433578	---	---	---	1.956289	2.730144
CashDum	19.008921	---	---	---	---	3.718952

CrossDum	18.925714	2.958398	2.600601	---	---	---
LogDV	246.821713	---	---	2.283714	3.376913	---
MarCap	257.251554	4.030223	3.855219	---	---	---
RelDum	2.221161	2.117175	2.096994	2.144877	2.144899	1.999868
RelSize	1.445555	1.105186	1.069543	1.124579	1.128451	1.088625
STOCKCROSS	5.661306	3.406209	---	3.007348	3.007409	3.008608
StockDum	5.446280	3.354329	---	3.15741	3.283442	3.298522
Tlist	1.149745	1.124626	1.100226	1.125908	1.126232	1.125875

Appendix Table 16. Correlation matrix for CE MAM



Appendix Table 17. Test for multicollinearity of the variables across models for CE MAM

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	9.356387	---	---	---	1.3862	1.657254
CashDum	6.130387	---	---	---	---	2.372724
CrossDum	15.392584	2.64172	1.704528	---	---	---
LogDV	166.465922	---	---	2.759215	3.2568	---
MarCap	165.530089	3.282609	2.937821	---	---	---
RelDum	2.277676	2.222997	2.213908	2.241916	2.242997	2.037595
RelSize	1.445361	1.110785	1.026096	1.121336	1.121358	1.117027
STOCKCROSS	9.597655	4.043612	---	2.873032	2.873068	2.869451
StockDum	5.140796	3.583177	---	3.412565	3.565578	3.305367
Tlist	1.293069	1.218693	1.218028	1.229876	1.229883	1.173305

Appendix Table 18. MM CAR 5 day window Total sample Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	0.0044* (0.052)	0.0068*** (0.006)
STOCKCROSS	0.0117** (0.024)	---	0.0173*** (0.0)	0.0176*** (0.0)	0.0176*** (0.0)
CashDum	---	---	---	---	-0.0047 (0.139)
StockDum	0.0032 (0.435)	---	0.0007 (0.865)	0.0027 (0.508)	0.0006 (0.887)
CrossDum	0.0052** (0.023)	0.0075*** (0.0)	---	---	---
RelDum	0.0037*	0.0045**	0.0034*	0.0036*	0.0038*

	(0.066)	(0.03)	(0.097)	(0.08)	(0.066)
LogDV	---	---	-0.0008* (0.071)	-0.0006 (0.202)	---
MarCap	-0.001** (0.034)	-0.0013*** (0.003)	---	---	---
RelSize	-0.0 (0.797)	0.0 (0.871)	0.0001 (0.723)	0.0001 (0.684)	0.0001 (0.739)
Tlist	- 0.0097*** (0.003)	-0.0091*** (0.006)	-0.01*** (0.003)	-0.0105*** (0.002)	-0.0119*** (0.0)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.175	0.134	0.156	0.163	0.164
Adj. R-squared	0.128	0.09	0.111	0.116	0.117
F-statistic	3.755	3.005	3.431	3.467	3.494
Prob (F-statistic)	0.0	0.0	0.0	0.0	0.0
N obs.	470	470	470	470	470
*, **, *** denote the statistical significance at 10%, 5% and 1% level respectively					

Appendix Table 19. MAM CAR 5 day window Total sample Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	-0.0034 (0.361)	-0.0032 (0.426)
STOCKCROSS	0.018** (0.034)	---	0.0169** (0.028)	0.0167** (0.03)	0.0167** (0.029)

CashDum	---	---	---	---	0.0 (0.992)
StockDum	-0.001 (0.884)	---	0.0004 (0.946)	-0.0011 (0.868)	-0.0008 (0.91)
CrossDum	-0.0016 (0.666)	0.0019 (0.575)	---	---	---
RelDum	-0.0007 (0.839)	-0.0003 (0.931)	-0.0007 (0.837)	-0.0007 (0.844)	-0.0007 (0.83)
LogDV	---	---	-0.0 (0.979)	-0.0002 (0.807)	---
MarCap	-0.0006 (0.398)	-0.001 (0.203)	---	---	---
RelSize	-0.0001 (0.703)	-0.0001 (0.866)	-0.0 (0.878)	-0.0001 (0.859)	-0.0001 (0.852)
Tlist	-0.0129** (0.018)	-0.0121** (0.028)	-0.0138** (0.013)	-0.0136** (0.015)	-0.014*** (0.009)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.077	0.057	0.075	0.077	0.077
Adj. R-squared	0.029	0.012	0.029	0.029	0.029
F-statistic	1.592	1.266	1.627	1.595	1.592
Prob (F-statistic)	0.036	0.184	0.032	0.035	0.036
N obs.	504	504	504	504	504
*, **, *** denote the statistical significance at 10%, 5% and 1% level respectively					

Appendix Table 20. MM CAR 5 day window UK Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	0.0043 (0.162)	0.0066* (0.058)
STOCKCROSS	-0.0016 (0.852)	---	0.005 (0.539)	0.0052 (0.519)	0.0052 (0.518)
CashDum	---	---	---	---	-0.0055 (0.262)
StockDum	0.0091 (0.202)	---	0.0044 (0.512)	0.007 (0.316)	0.0044 (0.546)
CrossDum	0.0065* (0.058)	0.0055* (0.078)	---	---	---
RelDum	0.0067** (0.018)	0.0069** (0.015)	0.0061** (0.03)	0.0065** (0.021)	0.0068** (0.016)
LogDV	---	---	-0.0005 (0.472)	-0.0003 (0.726)	---
MarCap	-0.0003 (0.649)	-0.0007 (0.298)	---	---	---
RelSize	0.0002 (0.914)	0.0001 (0.953)	0.0003 (0.876)	0.0005 (0.783)	0.0001 (0.937)
Tlist	-0.0106** (0.048)	-0.0098* (0.065)	-0.0103* (0.057)	-0.0113** (0.039)	-0.0112** (0.033)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.204	0.192	0.189	0.196	0.2
Adj. R-squared	0.123	0.117	0.111	0.115	0.119
F-statistic	2.528	2.579	2.415	2.406	2.466
Prob (F-statistic)	0.0	0.0	0.0	0.0	0.0
N obs.	262	262	262	262	262

*, **, *** denote the statistical significance at 10%, 5% and 1% level respectively

Appendix Table 21. MAM CAR 5 day window UK Regression results

Variables					
CASHCROSS	---	---	---	-0.0012 (0.808)	0.0003 (0.955)
STOCKCROSS	0.0141 (0.341)	---	0.0142 (0.304)	0.0142 (0.306)	0.0132 (0.338)
CashDum	---	---	---	---	-0.0012 (0.88)
StockDum	-0.003 (0.802)	---	-0.0022 (0.849)	-0.0029 (0.806)	-0.0008 (0.947)
CrossDum	-0.0003 (0.956)	0.0011 (0.824)	---	---	---
RelDum	-0.0046 (0.311)	-0.0045 (0.324)	-0.0042 (0.355)	-0.0042 (0.355)	-0.0043 (0.354)
LogDV	---	---	-0.0011 (0.334)	-0.0012 (0.32)	---
MarCap	-0.0016 (0.19)	-0.0017 (0.142)	---	---	---
RelSize	-0.0032 (0.309)	-0.0027 (0.373)	-0.0017 (0.557)	-0.0017 (0.549)	-0.0018 (0.538)
Tlist	-0.0024 (0.797)	-0.0021 (0.822)	-0.003 (0.75)	-0.0027 (0.772)	-0.005 (0.588)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.08	0.074	0.077	0.077	0.073
Adj. R-squared	-0.004	-0.003	-0.004	-0.008	-0.011

F-statistic	0.948	0.96	0.95	0.91	0.866
Prob (F-statistic)	0.537	0.516	0.531	0.589	0.649
N obs.	287	287	287	287	287
*, **, *** denote the statistical significance at 10%, 5% and 1% level respectively					

Appendix Table 22. MM CAR 5 day window CE Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	0.0051 (0.145)	0.0054 (0.145)
STOCKCROSS	0.0195*** (0.004)	---	0.0245*** (0.0)	0.0245*** (0.0)	0.0248*** (0.0)
CashDum	---	---	---	---	0.0004 (0.924)
StockDum	-0.0005 (0.928)	---	-0.0011 (0.821)	0.0006 (0.901)	0.0012 (0.84)
CrossDum	0.0041 (0.216)	0.0104* (0.093)	---	---	---
RelDum	0.0014 (0.627)	0.003 (0.325)	0.0004 (0.88)	0.0005 (0.865)	0.0002 (0.95)
LogDV	---	---	-0.0005 (0.401)	-0.0003 (0.602)	---
MarCap	-0.0013** (0.043)	-0.0017** (0.011)	---	---	---
RelSize	-0.0001 (0.599)	-0.0 (0.882)	0.0 (0.857)	0.0 (0.813)	0.0 (0.828)

Tlist	-0.0072* (0.079)	-0.0077* (0.067)	-0.0082* (0.051)	-0.0088** (0.037)	-0.0095** (0.018)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.301	0.233	0.277	0.285	0.284
Adj. R-squared	0.205	0.137	0.182	0.187	0.186
F-statistic	3.141	2.428	2.922	2.908	2.893
Prob (F-statistic)	0.0	0.001	0.0	0.0	0.0
N obs.	208	208	208	208	208
*, **, *** denote the statistical significance at 10%, 5% and 1% level respectively					

Appendix Table 23. MAM CAR 5 day window CE Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	-0.0065 (0.299)	-0.0082 (0.201)
STOCKCROSS	0.0206* (0.073)	---	0.0154 (0.109)	0.0157 (0.103)	0.0156 (0.105)
CashDum	---	---	---	---	0.004 (0.585)
StockDum	0.0005 (0.951)	---	0.003 (0.712)	0.0008 (0.923)	0.0032 (0.742)
CrossDum	-0.0055 (0.351)	0.0023 (0.648)	---	---	---
RelDum	0.0049 (0.325)	0.0057 (0.257)	0.0044 (0.371)	0.0044 (0.372)	0.0045 (0.361)
LogDV	---	---	0.0007 (0.498)	0.0005 (0.668)	---

MarCap	-0.0002 (0.839)	-0.0006 (0.584)	---	---	---
RelSize	-0.0 (0.886)	0.0 (0.885)	-0.0 (0.96)	-0.0 (0.923)	-0.0 (0.919)
Tlist	- 0.0197*** (0.004)	-0.0195*** (0.005)	-0.0213*** (0.002)	-0.0207*** (0.003)	-0.0196*** (0.003)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.215	0.183	0.213	0.217	0.218
Adj. R-squared	0.112	0.086	0.115	0.115	0.116
F-statistic	2.088	1.881	2.165	2.122	2.128
Prob (F-statistic)	0.003	0.012	0.002	0.002	0.002
N obs.	217	217	217	217	217
*, **, *** denote the statistical significance at 10%, 5% and 1% level respectively					

Appendix Table 24. MM CAR 3 day window Total sample Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	0.0042* (0.056)	0.0077*** (0.001)
STOCKCROSS	0.0121** (0.014)	---	0.0186*** (0.0)	0.0189*** (0.0)	0.0187*** (0.0)
CashDum	---	---	---	---	-0.0089*** (0.004)
StockDum	0.001 (0.794)	---	-0.0019 (0.625)	0.0001 (0.988)	-0.0049 (0.253)
CrossDum	0.0061*** (0.005)	0.0085*** (0.0)	---	---	---

RelDum	0.0009 (0.62)	0.0016 (0.412)	0.0005 (0.811)	0.0006 (0.746)	0.0012 (0.523)
LogDV	---	---	-0.0006 (0.161)	-0.0004 (0.373)	---
MarCap	-0.0009** (0.034)	-0.0012*** (0.005)	---	---	---
RelSize	-0.0002 (0.183)	-0.0002 (0.318)	-0.0001 (0.432)	-0.0001 (0.461)	-0.0001 (0.41)
Tlist	-0.0073** (0.017)	-0.0068** (0.029)	-0.008** (0.012)	-0.0085*** (0.008)	-0.0095*** (0.002)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.185	0.151	0.158	0.165	0.179
Adj. R-squared	0.139	0.107	0.112	0.118	0.133
F-statistic	4.02	3.445	3.471	3.499	3.87
Prob (F-statistic)	0.0	0.0	0.0	0.0	0.0
N obs.	470	470	470	470	470

Appendix Table 25. MAM CAR 3 day window Total sample Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	-0.004 (0.271)	-0.002 (0.613)
STOCKCROSS	0.0227*** (0.005)	---	0.0225*** (0.002)	0.0223*** (0.002)	0.0221*** (0.003)
CashDum	---	---	---	---	-0.0082 (0.101)

StockDum	-0.0048 (0.463)	---	-0.003 (0.625)	-0.0048 (0.452)	-0.0109 (0.122)
CrossDum	-0.0008 (0.816)	0.0036 (0.278)	---	---	---
RelDum	-0.0003 (0.92)	0.0 (0.989)	-0.0006 (0.841)	-0.0006 (0.848)	0.0002 (0.958)
LogDV	---	---	0.0009 (0.224)	0.0007 (0.359)	---
MarCap	-0.0007 (0.346)	-0.0009 (0.189)	---	---	---
RelSize	-0.0005* (0.082)	-0.0005 (0.112)	-0.0005 (0.11)	-0.0005 (0.103)	-0.0005 (0.105)
Tlist	-0.0136*** (0.01)	-0.0129** (0.014)	-0.0166*** (0.002)	-0.0162*** (0.002)	-0.0147*** (0.004)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.121	0.097	0.122	0.124	0.128
Adj. R-squared	0.075	0.054	0.078	0.079	0.082
F-statistic	2.634	2.247	2.777	2.716	2.801
Prob (F-statistic)	0.0	0.001	0.0	0.0	0.0
N obs.	504	504	504	504	504

Appendix Table 26. MM CAR 3 day window UK Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	0.0023 (0.45)	0.0062* (0.065)
STOCKCROSS	0.0011 (0.896)	---	0.005 (0.528)	0.0051 (0.519)	0.0054 (0.487)

CashDum	---	---	---	---	-0.0112** (0.019)
StockDum	0.0074 (0.283)	---	0.0055 (0.395)	0.0069 (0.308)	0.0003 (0.971)
CrossDum	0.0039 (0.235)	0.0034 (0.266)	---	---	---
RelDum	0.0019 (0.487)	0.0021 (0.441)	0.0016 (0.566)	0.0018 (0.518)	0.0024 (0.371)
LogDV	---	---	-0.0 (0.966)	0.0001 (0.884)	---
MarCap	-0.0005 (0.489)	-0.0009 (0.203)	---	---	---
RelSize	-0.0001 (0.953)	-0.0001 (0.948)	0.0002 (0.91)	0.0003 (0.86)	-0.0004 (0.812)
Tlist	-0.0096* (0.065)	-0.0088* (0.09)	-0.0104** (0.047)	-0.0109** (0.039)	-0.0096* (0.057)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.236	0.224	0.227	0.229	0.247
Adj. R-squared	0.159	0.152	0.153	0.151	0.171
F-statistic	3.052	3.13	3.047	2.938	3.238
Prob (F-statistic)	0.0	0.0	0.0	0.0	0.0
N obs.	262	262	262	262	262

Appendix Table 27. MAM CAR 3 day window UK Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5

CASHCROSS	---	---	---	-0.0047 (0.339)	-0.0012 (0.822)
STOCKCROSS	0.0165 (0.255)	---	0.0139 (0.303)	0.0138 (0.307)	0.0154 (0.252)
CashDum	---	---	---	---	-0.0118 (0.123)
StockDum	-0.0032 (0.788)	---	0.0012 (0.917)	-0.0016 (0.886)	-0.0109 (0.368)
CrossDum	-0.0013 (0.801)	0.0003 (0.952)	---	---	---
RelDum	-0.0056 (0.21)	-0.0055 (0.223)	-0.0055 (0.218)	-0.0055 (0.215)	-0.0048 (0.278)
LogDV	---	---	0.001 (0.369)	0.0008 (0.508)	---
MarCap	-0.0009 (0.463)	-0.001 (0.37)	---	---	---
RelSize	-0.0007 (0.813)	-0.0002 (0.942)	0.0001 (0.983)	-0.0001 (0.973)	-0.0008 (0.772)
Tlist	-0.0035 (0.706)	-0.003 (0.741)	-0.0069 (0.454)	-0.0059 (0.522)	-0.0032 (0.722)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.143	0.135	0.143	0.146	0.153
Adj. R-squared	0.064	0.062	0.069	0.068	0.075
F-statistic	1.815	1.865	1.915	1.873	1.968
Prob (F-statistic)	0.013	0.012	0.008	0.009	0.005
N obs.	287	287	287	287	287

Appendix Table 28. MM CAAR 3 day window CE Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	0.0079**	0.0087***
				(0.014)	(0.01)
STOCKCROSS	0.018***	---	0.0263***	0.0263***	0.0266***
	(0.004)		(0.0)	(0.0)	(0.0)
CashDum	---	---	---	---	-0.0009
					(0.809)
StockDum	-0.0033	---	-0.0055	-0.0028	-0.003
	(0.468)		(0.225)	(0.539)	(0.558)
CrossDum	0.0075**	0.0129***	---	---	---
	(0.013)	(0.0)			
RelDum	0.0009	0.0021	-0.0001	0.0	-0.0003
	(0.724)	(0.438)	(0.983)	(0.993)	(0.921)
LogDV	---	---	-0.0008	-0.0005	---
			(0.187)	(0.426)	
MarCap	-0.0013**	-0.0015**	---	---	---
	(0.029)	(0.011)			
RelSize	-0.0002	-0.0001	-0.0001	-0.0	-0.0
	(0.28)	(0.384)	(0.712)	(0.781)	(0.762)
Tlist	-0.0024	-0.0031	-0.0029	-0.0037	-0.0048
	(0.518)	(0.411)	(0.456)	(0.327)	(0.184)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.299	0.247	0.252	0.276	0.274
Adj. R-squared	0.203	0.153	0.154	0.177	0.174
F-statistic	3.108	2.623	2.568	2.78	2.748
Prob (F-statistic)	0.0	0.0	0.0	0.0	0.0

N obs.	208	208	208	208	208

Appendix Table 29. MAM CAAR 3 day window CE Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CASHCROSS	---	---	---	-0.0031 (0.59)	-0.0033 (0.57)
STOCKCROSS	0.0264** (0.013)	---	0.0242*** (0.006)	0.0244*** (0.006)	0.0239*** (0.007)
CashDum	---	---	---	---	-0.0012 (0.853)
StockDum	-0.0051 (0.513)	---	-0.0034 (0.641)	-0.0044 (0.558)	-0.0056 (0.526)
CrossDum	-0.003 (0.584)	0.006 (0.187)	---	---	---
RelDum	0.0063 (0.163)	0.0072 (0.121)	0.0056 (0.215)	0.0056 (0.216)	0.0061 (0.18)
LogDV	---	---	0.0006 (0.508)	0.0005 (0.6)	---
MarCap	-0.0005 (0.58)	-0.0008 (0.408)	---	---	---
RelSize	-0.0004 (0.126)	-0.0004 (0.18)	-0.0004 (0.154)	-0.0004 (0.148)	-0.0004 (0.151)
Tlist	-0.0187*** (0.003)	-0.0188*** (0.003)	-0.0207*** (0.001)	-0.0204*** (0.001)	-0.0195*** (0.001)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
R-squared	0.238	0.199	0.238	0.239	0.238
Adj. R-squared	0.138	0.104	0.142	0.139	0.138

F-statistic	2.385	2.086	2.494	2.397	2.385
Prob (F-statistic)	0.001	0.004	0.0	0.0	0.001
N obs.	217	217	217	217	217